Report of the Manitoba Climate Change Task Force | September 2001

Manitoba and Climate Change

Investing in our future

101-07408/

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Manitoba Climate Change Task Force

305-155 Carlton Street
Winnipeg, Manitoba
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September 2001

The Honourable Gary Doer
Premier of Manitoba
Legislative Building
Winnipeg, Manitoba

Dear Premier Doer:

Earlier this year you invited my colleagues and me to work as a task force, and charged us with the responsibility of considering Manitoba's challenges and opportunities surrounding the issue of climate change. This report is the outcome, and it offers our advice to you and your colleagues in the government of Manitoba about what we believe should be done to minimize the detrimental effects, as well as take advantage of some significant opportunities presented by climate change.

The reduction of greenhouse gas emissions is essential in addressing climate change, and it must become a higher priority for Manitoba and the rest of the world. It is clear that the risks of erratic weather, deteriorating agricultural conditions, extensive forest fires, and serious flooding are already attributable in many respects to climate change. How Manitoba adapts to climate change and alleviates its effects will be crucial for future economic development, particularly for agriculture, transportation, forestry and energy.

As a task force, we met with Manitobans from across the province. We obtained the views of experts and concerned citizens from communities, environmental groups, government agencies, aboriginal organizations, industry associations, academic institutions and youth.

We found no shortage of imaginative solutions to problems related to climate change. Suggestions ranged from airships serving northern communities to reduced soil tillage and greater co-generation of power. While not all of the ideas that were suggested are reflected or referenced in this report, they have been given full consideration and are being made available to the public though the task force's Web site.

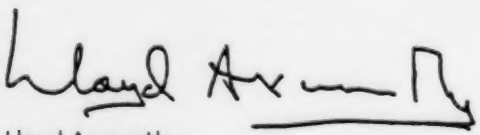
Our report concentrates on providing practical advice that can serve as the basis for the government of Manitoba's action plan and the implementation of further measures by all segments of society. Throughout our meetings and discussions, we were aware of the controversy surrounding some aspects of climate change. In the past, a disproportionate amount of public consideration of climate change seemed to have been at the theoretical and international political level, with too few examples and explanations of how it affects us as individuals in our communities, and our future prospects in Manitoba.

The initiation of the Manitoba Climate Change Task Force demonstrated your government's far-sighted approach to address this important issue. Several presenters noted that this task force has been one of the few tangible efforts recently undertaken in Canada that has dealt with both improving public understanding and developing public policy on this subject that is critical to our future.

It has been a privilege to work with my task force colleagues Christine Hamblin, Jack Dubois, David Runnalls, Elaine Cowan, Michael Spence, Maureen Hancharyk, Jim Carr and Terry Duguid. We are grateful for the cooperation of provincial government officials, community and aboriginal groups, non-governmental organizations, the business community and the many individuals across the province who contributed to our deliberations. Our work on this project during the past five months has provided all members of the task force with a sense of the significance of climate change to Manitoba's environmental, economic and social future.

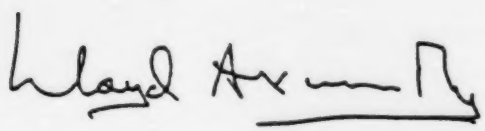
The task force report was just being completed as the new international agreement on climate change was reached in Bonn. That accord demonstrates the importance being placed on climate change around the world, and it highlights the need for governments across Canada to begin to live up to the letter and spirit of what was agreed upon. Manitoba can and should play a pivotal role in leading the process of recasting the new federal and provincial government partnership that is now essential in the light of this renewal of international cooperation. Our letter of July 25 explained what we consider to be the essence of that task.

The effort we make now as Manitobans and Canadians is creating, in one form or another, the environmental and economic legacy for future generations. If we act prudently and expeditiously on climate change, the actions we take today will be a wise investment in our province's future.

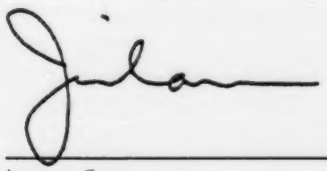


Lloyd Axworthy
Chair

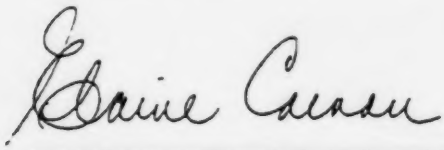
The Manitoba Climate Change Task Force gratefully acknowledges the valuable contribution of all those who took the time to participate in this important exercise. Future generations of Manitobans will be the beneficiaries of their generous commitment to the health and prosperity of our province.



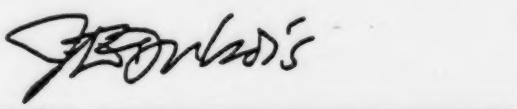
Lloyd Axworthy



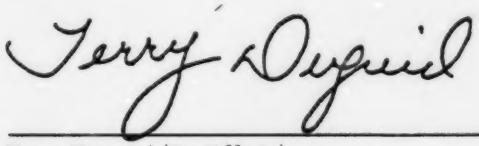
James Carr



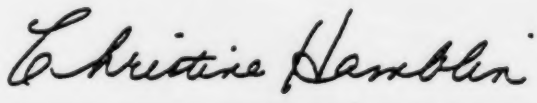
Elaine Cowan



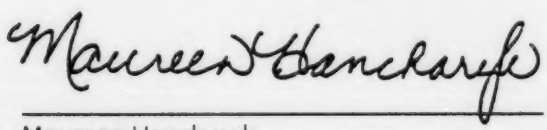
Jack Dubois



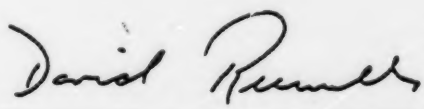
Terry Duguid (Ex-Officio)



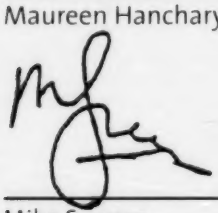
Christine Hamblin



Maureen Hancharyk



David Runnalls



Mike Spence

Executive Summary

Climate change poses a particular challenge to Manitoba due to the diversity, magnitude and volatility of its impacts. At the same time, the global economy of the future will be increasingly based on the development of clean and renewable energy. Manitoba is well positioned to benefit from this trend. Action is urgently needed, however, to ensure that Manitoba is able to respond to the challenges ahead and take advantage of emerging opportunities.

In March 2001, Premier Gary Doer and Conservation Minister Oscar Lathlin established an eight-member task force to examine the challenges and opportunities for Manitoba posed by climate change. The information and recommendations contained in this report are meant to provide a basis from which the government of Manitoba will develop its climate change action plan.

Climate change has become synonymous with increasingly dramatic and unprecedented flooding, fires, drought and severe weather conditions. It is already altering the landscape of Manitoba's agricultural regions and forests, impacting on people's lives as they begin to adapt to its effects. Task force members were concerned by the extent of climate change that has already become evident in Manitoba, and is particularly affecting northern and rural communities. They found that Manitoba's system of winter roads, for instance, is under threat from warmer temperatures. At the same time, the task force noted recent impacts on agriculture and the projections for unpredictable and variable weather conditions.

Those who made presentations to the task force emphasized that action on climate change is needed now and called upon the government of Manitoba to take a leadership role among the provinces. They recognized that mitigation efforts, involving real reductions in greenhouse gases, are required in conjunction with adaptation strategies. Through its public consultations, the task force learned that, although there is a small, active community working on the issue of climate change, greater public understanding of its implications is essential.

THE TASK FORCE MAKES SEVERAL RECOMMENDATIONS, INCLUDING:

- Crafting a provincial energy policy that demands the development of renewable and alternative energy options, maximizing the energy sector's potential as an economic development tool, especially in the areas of hydro, biofuels and hydrogen;
- Conducting a review of the Manitoba Hydro Act to determine how the utility should participate in the province's energy future, recognizing that it is the key energy provider in the province;
- Introducing an expanded grants and interest rate incentive program by Manitoba Hydro to encourage energy efficiency, building on its successful PowerSmart program;
- Defining the climate change components that must be addressed as fundamental issues in the establishment of a continental energy policy with the United States and Mexico;
- Undertaking research and analysis in Manitoba with a focus on local and prairie regional effects of climate change;
- Establishing a northern strategic initiative that addresses crucial issues, including the shipping season for the port of Churchill, winter roads and employment opportunities affected by climate change;
- New measures that would provide incentives for alternative fuels and funding for transit, including support for special initiatives such as the South West Transit Corridor; and,
- Initiating comprehensive education, outreach and training programs to raise the public's climate change awareness, integrating consideration of the issue into the curricula of the educational system and establishing a Manitoba climate change information hub.

The report points out that real reductions in greenhouse gas emissions must be achieved. It calls on the Manitoba government to provide leadership by example, by introducing several measures, such as using ethanol-blended gasoline for its vehicle fleet and retrofitting government buildings, to demonstrate its climate change commitment.

The report explains the importance to Manitoba of establishing an international or regional North American regime for carbon emissions trading. Manitoba is

in a position, with its hydro-based energy exports, to enable its customers in the United States to use its clean energy and obtain credits. The establishment of national and international market-based regimes for such carbon emissions credits, in conjunction with a program of agricultural and forest carbon sinks, could be especially advantageous to farmers, landowners and Manitoba Hydro.

Given Manitoba's high stake in Canada's clean energy future, the task force suggests that Manitoba take a leadership role among the provinces and territories in reformulating Canada's climate change plans, especially in light of the July agreement in Bonn on implementing the Kyoto Protocol. This should include ensuring that Manitoba and its academic and private sector institutions are more directly involved in the national research and pilot projects in climate change. The report also calls for the establishment of a new infrastructure program with a climate change focus.

Partnering with the city of Winnipeg and other municipalities is essential to develop greenhouse gas initiatives that promote sustainable cities. The provincial government should also aid urban municipalities to secure federal climate change funds and use its authority to change fuel consumption behaviour and energy use patterns in urban areas.

As an essential step towards achieving these recommendations, the task force advocates establishing a Climate Change Initiative office, a central agency within the Manitoba government's Executive Council. This office would ensure that an integrated and cross-departmental approach is taken to respond effectively and efficiently to climate change challenges and opportunities.

An innovative Climate Change Partnership should be established jointly by the three levels of government and operate in a form similar to the Winnipeg Development Agreement. With multi-level funding of $75 million over five years, it would provide resources for the research and pilot projects necessary for Manitoba to address climate change. The provincial contribution of $25 million could come from sources such as Manitoba Hydro.

"The evidence of dramatic effects from changes in the earth's climate is mounting... With our natural advantages, our research base and the active interest of our youth and schools, Manitoba is ideally situated to demonstrate leadership in climate change public policy."

Premier Gary Doer

In the next few years, the government of Manitoba will be making some of the most significant and long-term investment decisions the province has ever faced. Many of these choices will be linked to or influenced by climate change, such as those related to water management in the Red River Valley, construction of permanent roads in Manitoba's north, and development of new hydroelectric projects. It is essential that these decisions and others be made with a full understanding of the risk factors, opportunities and state of climate conditions as they can be expected to evolve in the coming decades.

This report is a first step towards developing an understanding of climate change needed by Manitobans to be involved in making these difficult decisions. The information and advice it contains have been intended to provide a basis from which the government of Manitoba can develop its climate change action plan, due to be unveiled later this year. It is also meant to contribute to the public's understanding of the issues and provide a basis for developing consensus on the next steps to be taken by the provincial government and by Manitobans.

The evidence of emerging climate trends and rising public concern led the government of Manitoba to establish the Manitoba Climate Change Task Force. Its formation was sparked by the high level of apprehension expressed by Manitobans during a public forum on climate change held in January 2001. Hosted by the Manitoba Clean Environment Commission and the International Institute for Sustainable Development, that event brought together over 300 participants who spent a day hearing from experts about the science of climate change, the potential implications for Manitoba and the international response to this issue.

In March, Premier Gary Doer and Conservation Minister Oscar Lathlin asked former Winnipeg South Centre M.P. and Minister of Foreign Affairs, The Hon. Lloyd Axworthy, to chair an eight-member task force that represented a broad spectrum of geographic, social and economic backgrounds, interests and knowledge. The task force was asked to address climate change as a public policy challenge and seek new ideas on what should be done. Its purpose was to provide a conduit for information, opinions and recommendations that would enable the government of Manitoba to develop a practical climate change action plan.

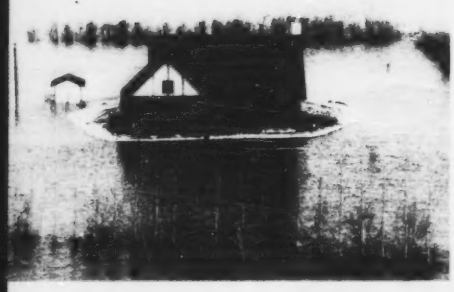
How is Manitoba's Climate Changing?

"Manitoba is a sensitive, vulnerable region and the current process of climate change is increasing our vulnerability and the number of extreme events (e.g., droughts, floods, permafrost shift)."

Mike Balshaw • MWB Consulting Ltd.

Manitoba will experience earlier and more severe climate change than many other parts of the world, largely due to our northern geography and location in the centre of the continent. What's more, the importance of natural resources in our economy and the expansive, fragile nature of our northern environments have increased Manitoba's exposure to the effects of climate change.

The province is expected to experience average temperature increases of 4-6 degrees Celsius by the end of this century. This is at the higher end of the range of warming that is predicted globally.[1] A mean temperature increase of this magnitude may not sound like much, but we know that our environment responds radically to temperature changes of even 1-2 degrees Celsius.



Temperature changes greatly affect precipitation, water levels and other factors that are important to the environment and to Manitoba's economy. Overall, precipitation is expected to increase, but will be less predictable and probably concentrated in severe weather events. Spring is predicted to arrive earlier and be warmer and wetter, leading to increased risk of flooding. Summer temperatures are expected to rise, leading to higher evaporation, though summer precipitation will probably decline by 10-20 per cent. While the growing season will be longer, water and drought management could become significant challenges for Manitoba. In the fall, warmer temperatures would result in more frost-free days. And very sharp average temperature increases of 5-8 degrees Celsius could be expected in the winter. These changes would have major implications for all sectors.[2]

1 See, for example, Canadian centre for Climate Modeling and Analysis; CCC AGCM2 global plots at http://www.cccma.bc.ec.gc.ca. For a broader range of estimates of warming on the Canadian Prairies, see Herrington, Ross, Brian Johnson and Fraser Hunter. Volume III: Responding to Global Climate Change in the Prairies. In The Canada Country Study: Climate Impacts and Adaptation. Environment Canada, 1998. http://www.ec.gc.ca/climate/ccs/ccs_e.htm. For predicted mean global temperature changes between 1990 and 2100, see Intergovernmental Panel on Climate Change, Working Group I, Third Assessment Report. Summary for Policy Makers, p.13. http://www.ipcc.ch/.

2 Manitoba and Climate Change: A Primer. Winnipeg: Manitoba Clean Environment Commission and International Institute for Sustainable Development, 2001. See also Herrington, Ross, Brian Johnson and Fraser Hunter. Volume III: Responding to Global Climate Change in the Prairies. In *The Canada Country Study: Climate Impacts and Adaptation*. Environment Canada, 1998. http://www.ec.gc.ca/climate/ccs/ccs_e.htm.

The latest estimates of the Intergovernmental Panel on Climate Change, a United Nations body composed of the world's leading climate scientists, predict a global average temperature rise of 1.4-5.8 degrees Celsius between 1990 and 2100.* The actual global temperature increase is uncertain because it depends on how quickly, and by how much, global emissions of greenhouse gases are reduced. One thing is certain: some degree of warming is inevitable. Since most greenhouse gases have long lifespans in the atmosphere, even if emissions rates were stabilized at current levels, the effects would be felt for decades to come.

How do Manitobans Contribute to Climate Change?

Through our economic activities and lifestyles, Manitobans and all Canadians contribute to the process of climate change by generating greenhouse gases. In 1999, Manitoba's greenhouse gas emissions totaled approximately 20,900 kilotonnes of carbon dioxide equivalent (kt CO_2 eq). This total represents an increase of 2.5 per cent in comparison to emission rates in 1990. While Manitoba is responsible for only a small proportion of Canada's total greenhouse gas emissions, our emission levels on a per capita basis are comparable to the national average.

The majority of Manitoba's emissions come from two sectors — transportation and agriculture. Emissions from the transportation sector constituted 31 per cent of the province's emissions in 1999, while agriculture was responsible for 33 per cent of emissions. Energy use, excluding transportation, contributed about 24.5 per cent of emissions, while industry, waste disposal, land-use change and forestry and other sources accounted for the remaining 5.5 per cent.

As plans to address climate change are developed, energy must be a primary focus since it cuts across all sectors of the economy and is intimately connected to Manitobans' lifestyles. Reductions in Manitoba's greenhouse gases should involve encouraging fuel substitution, changing human behaviour, and making a firm commitment to sustainable development. Manitoba Hydro currently

* Intergovernmental Panel on Climate Change, Working Group I, Third Assessment Report, Summary for Policy Makers, p.13, http://www.ipcc.ch/.

What is Climate Change?

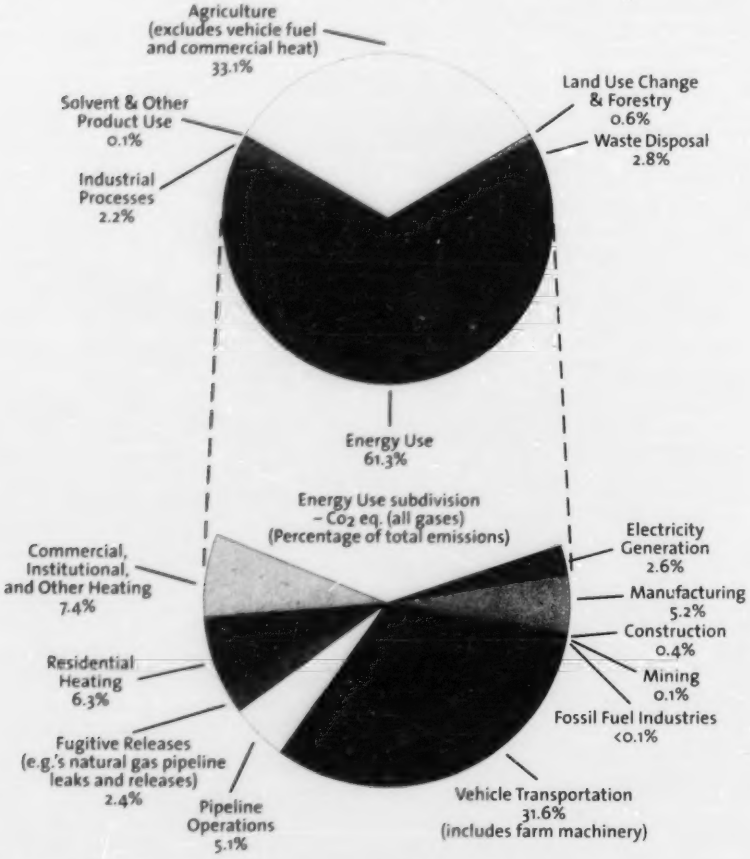
Climate change refers to the overall warming of the earth's atmosphere caused by the build-up of "greenhouse gases." The most important greenhouse gases are water vapor, carbon dioxide, methane and nitrous oxide. When the sun's heat reaches the earth, these gases act like the glass ceiling of a greenhouse, trapping the heat near the earth's surface. Through the burning of fossil fuels and forests since the industrial revolution, humans have emitted more greenhouse gases than the earth is able to absorb, leading to increased concentrations in the atmosphere, which in turn allows less of the sun's heat to be reflected back into space.

meets about 60 per cent of Manitoba's energy needs (25 per cent from hydroelectricity and 35 per cent from natural gas), and it must be a key player in addressing climate change. The capital region must be another area of focus given that 63 per cent[3] of Manitoba's population resides in it.

Manitoba faces some unique challenges as it develops plans to address climate change. In other parts of Canada, energy produced by coal or gas is used by a small number of large emitters. In Manitoba, however, there is no industry sector that can single-handedly deliver significant greenhouse gas reductions. Our economy is dominated by small businesses: approximately 95 per cent of all businesses in Manitoba have fewer than 50 employees. The agriculture sector includes numerous operations dispersed over a wide geographical area. Emissions from personal vehicles constitute a significant portion of our transportation emissions. This diversity of sources means that all Manitobans from all sectors of our economy and society will need to participate in efforts to reduce greenhouse gases.

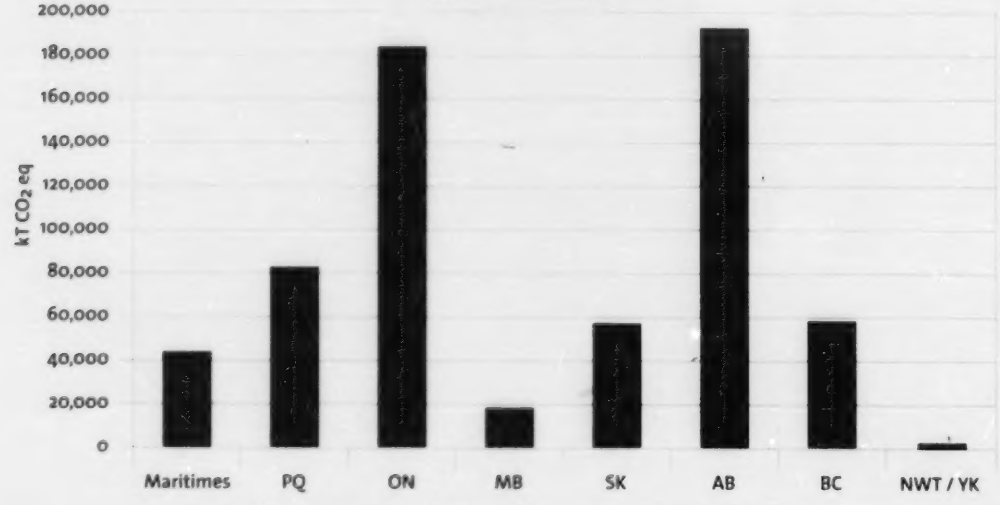
3 Statistics Canada, 1996 Census.

1999 Manitoba Greenhouse Gas Emissions Estimates
CO_2 eq. (all gases) (Percentage of total emissions)


Agriculture (excludes vehicle fuel and commercial heat) 33.1%
Land Use Change & Forestry 0.6%
Waste Disposal 2.8%
Solvent & Other Product Use 0.1%
Industrial Processes 2.2%
Energy Use 61.3%
Energy Use subdivision – Co_2 eq. (all gases) (Percentage of total emissions)
Electricity Generation 2.6%
Manufacturing 5.2%
Construction 0.4%
Mining 0.1%
Fossil Fuel Industries <0.1%
Vehicle Transportation 31.6% (includes farm machinery)
Pipeline Operations 5.1%
Fugitive Releases (e.g.'s natural gas pipeline leaks and releases) 2.4%
Residential Heating 6.3%
Commercial, Institutional, and Other Heating 7.4%

Source: Pollution Data branch, Greenhouse Gas Division, Environment Canada, August 2001.

"Canada's greenhouse gas inventory: 1997 emissions and removals with trends"
1996 estimates



Source: Environment Canada. *Canada's greenhouse gas inventory: 1997 emissions and removal trends.*

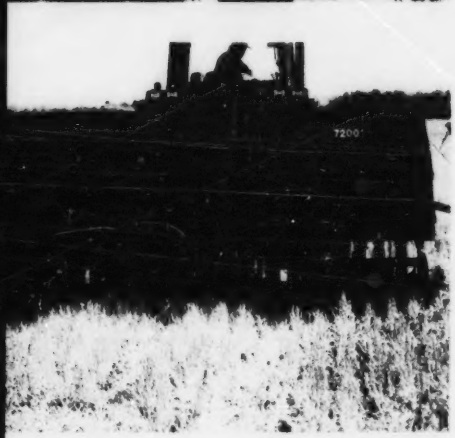
What are the Challenges and Opportunities?

Just as the impacts of climate change will differ according to region and industry sector, so will the opportunities that are offered by climate change and the possibilities for mitigating and adapting. It is important for all sectors of Manitoba's economy to prepare for the impacts and seize the opportunities.

Agriculture

"If technologies and practices can be demonstrated to address both the climate change issue as well as producers' immediate needs – in terms of greater social acceptance for their businesses, or reduced costs, or increased productivity and efficiency – then these technologies and practices can expect to find widespread and rapid acceptance in the agricultural community."

Marcel Hacault • Manitoba Pork Council



Zero till agriculture.

Due to its dependence on weather and climate, agriculture will be among the most affected sectors in Manitoba. The province will likely experience more frequent drought and will need to adjust water management and irrigation practices accordingly. Greater heat stress on animals and crops over the summer is also likely to be a problem. Many pests and diseases could survive over milder winters or spread into Manitoba from warmer regions. In response, farmers will need to adapt through measures such as switching to more drought-resistant crops, implementing or improving irrigation systems and altering cropland rotation cycles. They could also reduce exposure to risk by diversifying the farm economy through practices such as raising bison and other indigenous species for niche markets.

Potential benefits of climate change for Manitoba's agricultural sector include reduced heating requirements and cold stress of livestock in the winter. A longer growing season is anticipated which, if appropriate management systems are

introduced, could enable the cultivation of a wider variety of crops. Temperature and precipitation changes may support the expansion of agricultural cultivation northward, but soil conditions in these areas will be a critical limiting factor.

Given the right policy framework in Manitoba, Canada and around the world, there could be several economic opportunities for farmers as the climate changes. For instance, current income support programs in agriculture do not encourage alternative crop and land uses that would be beneficial to carbon sequestration. Agricultural enterprises could be managed as carbon sinks by enhancing the absorption of carbon dioxide from the atmosphere into forests and soils. Examples of these practices include zero soil tillage and agro-forestry. New incentives and markets could promote the development of agro-industries such as ethanol production.

Forests

Like agriculture, Manitoba's forestry sector will be significantly impacted by climate change. Our boreal forest, which is particularly sensitive to climate, constitutes 67 per cent of Manitoba's forested land and is the main source for the province's forest industry. It is likely that both the composition and distribution of the forest will change. Some tree species will adapt better than others, leading to changes in wildlife habitat. On the whole, the southern portion of the boreal forest is expected to decline and disappear, while the northern edge may not be able to extend into the existing tundra ecosystem due to the poor soils in this region.

Sinks

A carbon sink is an ecosystem, such as an ocean, forest or soil area, which removes and stores carbon from the air. The sink serves as a vehicle for removing a chemical or gas, such as carbon dioxide or methane, from the atmosphere and placing it into a permanent or temporary repository by transforming it into another substance. Trees, for example, can serve as carbon sinks because they are able to convert carbon dioxide from the air into plant sugars through the process of photosynthesis.

Sinks are fundamental factors in the on-going balance of absorption and release that determine the concentration of every greenhouse gas in the atmosphere. If a sink is able to absorb a greater concentration of a greenhouse gas than is being released through, for instance, the decaying of wood, then the concentration of this gas in the atmosphere will decrease; if the production source is greater than the sink, the concentration will increase.* Under the Kyoto Protocol, developed countries can include changes in net emissions, calculated as emissions minus removals of greenhouse gases, from certain activities related to land-use change, such as in the agriculture and forestry sectors. Calculating this net change in emissions is methodologically complex and still needs to be clarified.

* Mintzer 1992

These changes could significantly impact northern peoples and tourism operations that rely on hunting and fishing. The timber industry will be particularly affected as yields are reduced, susceptibility to pests and disease increases and forest fires become more frequent due to drought. The forestry industry may also be vulnerable as its international competitiveness and market share decline.

Opportunities exist, however, to adapt to and benefit from these changes. For example, with careful planning, forests could be managed as carbon sinks. Waste wood could soon be used in the production of ethanol, an alternative to gasoline. The key challenge for forest-dependent sectors and communities will be to develop creative and adaptive management strategies that enhance both the ecological resilience and the diversity of the economic benefits from Manitoba's forests.

Energy

"Energy efficiency will benefit the consumer, resulting in more disposable income, increased spending in non-related sectors, more comfortable and quiet and safe buildings and decreased lifecycle costs and improved indoor air quality."

Ryan Dalgleish • National Energy Conservation Association

The implications of climate change for Manitoba's energy sector, including electricity production are varied. Nearly all the energy produced in Manitoba is hydroelectricity, which accounts for most of our electricity consumption. Hydropower is generally considered to be "climate-friendly." The net effect of changing precipitation patterns on hydropower resources is uncertain.

Courtesy of Bison Transport.

Bison Transport

When the transportation industry deregulated in the 1980s, Bison Transport executives undertook an assessment of the social and environmental sensitivity of its operations. Included in this assessment was a detailed analysis of the company's greenhouse gas emission levels. Bison Transport subsequently introduced a program that combines a number of initiatives and has resulted in significant greenhouse gas emission reductions. Bison has invested heavily in fleet improvement, replacing older trucks with new, aerodynamic Volvo power units and installing diesel interior cab heaters that virtually eliminate winter idling. The company has also established computerized information centres that provide drivers with constant information on fuel consumption and driver habits. To support these initiatives, Bison Transport has implemented a driver training and performance evaluation program. Today, the company is meeting its emissions targets without having reduced engine power or lowering road speeds. The office of Energy Efficiency of Natural Resources Canada recently presented Bison Transport the National Energy Efficiency Award in the Transportation Fleet Management category.

www.bisontransport.com

Most of the energy used for heating, cooling and transportation in Manitoba is derived from imported, carbon-intensive fossil fuels such as refined petroleum products and natural gas. Substituting these fuels with green alternatives already available to Manitobans would significantly reduce our province's greenhouse gas emissions. As prices for fossil fuels rise, greenhouse gas friendly energy forms such as wind, solar, biofuels, and small hydro will become more competitive. Price signals could also stimulate investments in energy efficiency and conservation activities that will result in long-term savings for energy users and reduced pollution.

Climate change, and the policies eventually put in place to fight it, could represent a major opportunity for Manitoba Hydro to profitably expand its hydroelectricity generation. There may be increased demand for hydroelectricity in neighbouring provinces and territories and south of the border. The possible convergence of fossil fuel and renewable energy costs, or the expansion of "green" consumer demand, may place Manitoba in a good position to increase production of biofuels, wind, solar and geothermal power.

Transportation

"If one coach could replace 40 cars during rush hour commutes, it would generate 11 times less CO_2 and save 1.5 gallons per mile."

Percy Philips • Motor Coach Industries

Manitoba's large land mass and sparsely distributed population has led to the creation of an extensive transportation system that is important to our people and our economy. Changing climatic conditions could have significant implications

for this system and greatly increase the cost of its maintenance. In northern Manitoba, rising temperatures are expected to lead to permafrost melting, which could cause extensive disruption to existing road, rail and airport infrastructure. Warmer winters will also reduce the length of time winter roads can be used, affecting access to and from remote communities and increasing the need to fly in supplies.

In southern Manitoba, higher temperatures and changes in the frequency of the freeze/thaw cycle could increase the incidence of pavement buckling. Culverts and drains used to manage water on roads and right of ways may require greater maintenance. Changing winter storm patterns could make snow and ice management more difficult. Personal automobile users and trucking companies throughout Manitoba may be affected by rising costs for gasoline and diesel fuel.

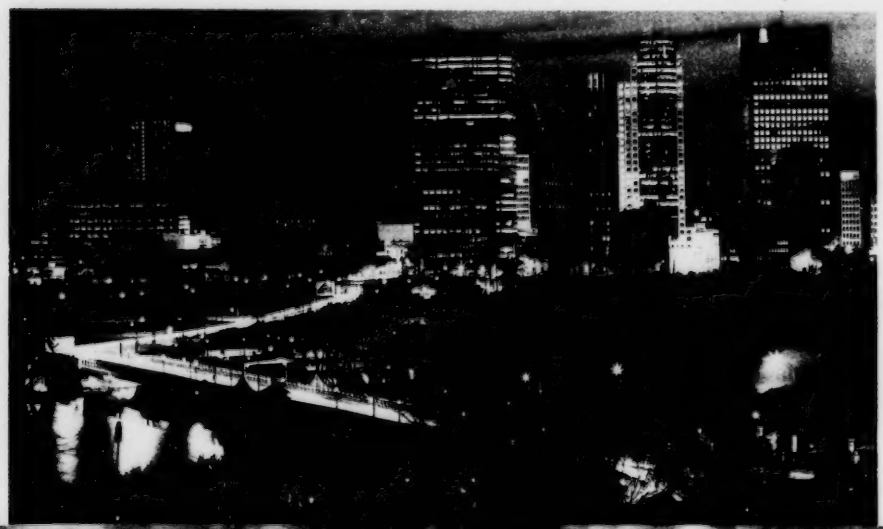
The transportation sector can play a key role in mitigation efforts through the introduction of policies and programs that support increased fuel efficiency, promotion of the use of alternative fuels and hybrid vehicles, improved public transportation and encouragement of e-commerce and telecommuting. These efforts will not only reduce emissions of greenhouse gases and several other pollutants, but will also provide savings for consumers.

Urban Areas

More than 70 per cent[4] of Manitoba's population lives in urban areas. Activities by urban-based individuals and businesses account for a significant proportion of the province's annual greenhouse gas emissions. At the same time, climatic changes in these areas will impact the majority of Manitobans.

Urban areas will not be immune to the more frequent and severe weather events predicted by current climate change models. These predicted severe weather events could further stress an already overtaxed civic infrastructure. Increased precipitation in the spring and fall will likely place greater demands on storm-water management systems. An increased risk of flooding will provide greater and continued emergency systems management challenges. Predicted climate changes may also make ensuring a safe and adequate supply of water more and more difficult throughout the year due to lower water tables and more concentrated exposure to contaminants. Additionally, while winter temperatures are predicted to rise, so is snowfall, increasing the cost of snow clearing expenditures and the occurrence and subsequent expense of winter automobile collisions.

With careful adaptation and mitigation strategies in place, urban communities could overcome these challenges and introduce initiatives that will bring benefits. Investing in energy efficiency in buildings and municipal facilities will save local governments and taxpayers money in the medium term. In addition, thoughtful urban planning and programs to expand public transportation will reduce dependence on automobiles and lower transport-related emissions and contribute to healthier communities.



4 Urban areas are defined as locations that have a minimum population concentration of 1,000 and a population density of at least 400 people per square kilometer, based on the previous census population counts. Source: Statistics Canada, *1996 Census – A National Overview*, cat# 93-357-XPB.

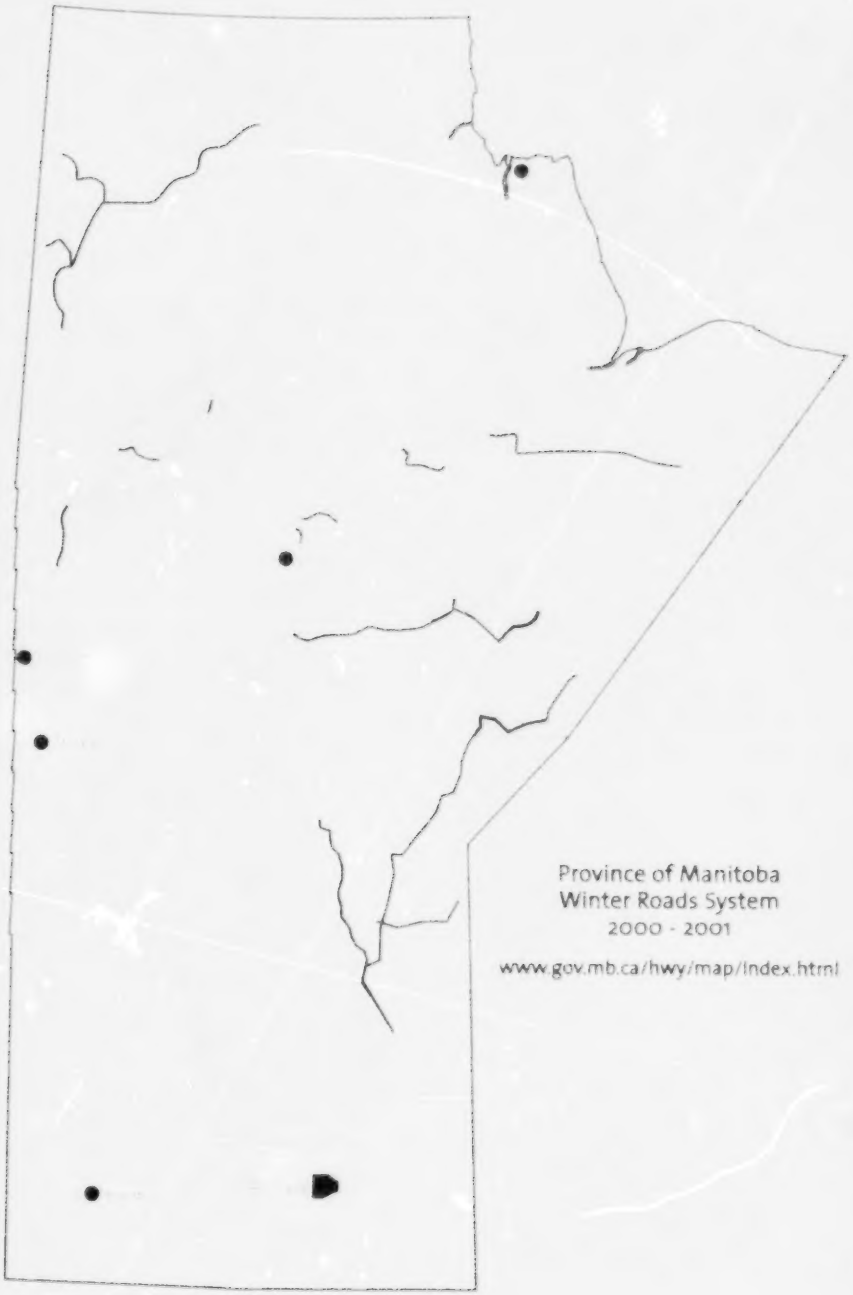
Northern Communities

"While government needs information on predicted effects in order to plan for the future, so too, business owners and community leaders in the North need information so that they can plan the salvation of their communities and their businesses."

David Shefford • Northern Manitoba Regional Development Corporation

Northern communities will perhaps feel the greatest impact of climate change in Manitoba. Melting permafrost could not only severely affect northern transportation networks; it may also result in damage to buildings and infrastructure, drainage problems and increased safety issues on roads and in buildings. The natural landscape and its flora and fauna could be affected, changes that could especially impact communities that continue to engage in traditional hunting and gathering activities. In Hudson Bay, an extension of the ice-free season could threaten seals and their main predators, polar bears. Coastal areas could experience more erosion and flooding due to a rising sea level.

On the positive side, the shipping season from the port of Churchill could expand because of a longer ice-free season. Northern residents and industries might also benefit from lower heating costs.



Province of Manitoba
Winter Roads System
2000 - 2001

www.gov.mb.ca/hwy/map/index.html

Inuit Observations

Residents of the tiny community of Sachs Harbour on Banks Island in Canada's western Arctic have recently observed startling climate-related changes, including the earlier break-up and later freeze-up of sea-ice that makes hunting and trapping more difficult and dangerous. New species of insects, fish and mammals are appearing for the first time. Permafrost, the permanent layer of frozen ground, is melting, causing town buildings to shift, and increasing the rate of slumping on the coastline and along the shores of inland lakes. The melting has already caused one inland lake to drain into the ocean, killing the freshwater fish. Given the dramatic changes that local people have observed, the Winnipeg-based International Institute for Sustainable Development and the Hunters and Trappers Committee of Sachs Harbour collaborated on a two-year project to document the evidence of Arctic climate change and communicate it to Canadian and international audiences. The production of a video documentary has provided decision-makers, the media and civil society worldwide with evidence of climate change from a human perspective.

www.iisd.org/casl/projects/inuitobs.htm

Manufacturing and Technology

Manitoba's diverse manufacturing and industrial sector can anticipate a future in which prices for fossil fuels will be higher and cooling costs will rise in response to warmer ambient temperatures. Greater incidence of severe weather events, and the general uncertainty surrounding the long-term impacts of climate change, will increase investment and insurer risk. The competitiveness of some industries may be reduced in response to climate change impacts in other regions and countries.

Goods produced in Manitoba with clean hydroelectric power may prove to have a competitive advantage in the emerging global economy that is sensitive to imbedded greenhouse gas emissions in products. Markets for "clean" technology may open and expand, such as in the area of hybrid/alternative fuel technology. Demand for energy efficient products is also likely to increase. Manitoba is well placed to respond to these changing market conditions due to the presence of established businesses such as the Kraus Group, New Flyer Industries, Mohawk and Loewen Windows. Other Manitoba companies could benefit from participating in a national emissions trading system.

Health and Welfare

The impact of climate change on individual Manitobans could range from health issues through socio-cultural effects to impacts on recreational activities. Health-related impacts include higher incidence of heat stress and allergies, as well as vulnerability to new diseases and pests. First Nations communities will be particularly affected by changes to, or the loss of, traditional ways of life. Winter sports lovers will have to cope with melting outdoor hockey rinks and the increasing need to cool indoor rinks. Cottage owners may be faced with flooding from heavy spring rains on still frozen lakes, followed by dramatically reduced water levels in the summer.

Households will find that they can reduce their contribution to climate change and save money in the long run by improving household energy efficiency, reducing automobile use and purchasing more energy-efficient appliances. However, many families will need appropriate up-front incentives and assistance to cope with the effects of climate change. More vulnerable populations, such as young children, the elderly and those with respiratory diseases will need greater access to information and services.

What are We Doing About It?

The International Framework

In the past decade, as the science of climate change has become increasingly reliable and impacts have begun to be noticed in certain areas of the world, international action on climate change has intensified. Approximately 180 countries, including Canada, have signed the 1992 United Nations Framework Convention on Climate Change. This treaty sets the principles and framework for a global response to climate change, including agreement on the need for preventative, precautionary action to slow climate change by limiting greenhouse gases emissions released by human activities. The 1997 Kyoto Protocol to the convention sets legally binding targets for each industrialized country to reduce its emissions. Canada's goal is to reduce our emissions to six per cent below 1990 levels between the years 2008 to 2012.

In July 2001, representatives from various nations, with the notable exception of the United States, reached a broad political agreement in Bonn, Germany, on the operational rulebook for the 1997 Kyoto Protocol. The "Bonn Agreement" is expected to pave the way for the Kyoto Protocol to be ratified. While many of the legal details of the agreement are still under negotiation, Canada and other countries now have a much clearer idea of the various ways they can meet their emissions targets.

Emissions Trading

Emissions trading is a key flexibility mechanism of the Kyoto Protocol, which allows developed countries to transfer emissions credits to each other. Developed countries that reduce emissions more than is required by their national target will be able to sell their excess credits to countries that find it more difficult or expensive to reduce their own emissions. Thus, emissions trading will reduce the overall cost of meeting the targets. Private corporations rather than government agencies will carry out much of the trading. Trading is already underway in Canada, the United States and other countries around the world.

International Institute for Sustainable Development

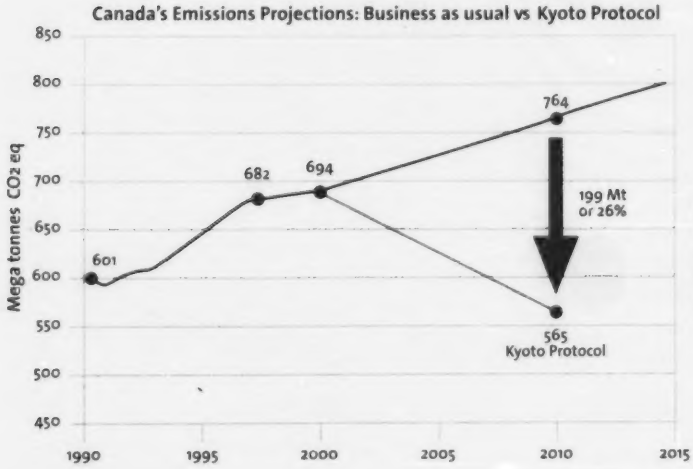
Canada's Role

Canada contributes approximately two per cent of global greenhouse gas emissions — a contribution that appears modest, but given our small population, puts us in the top three per capita emitters in the world. Since the Kyoto targets were set, our economy and emissions have continued to grow. It is therefore important to initiate early actions on reducing greenhouse gas emissions without jeopardizing our economic growth.

The government of Canada has participated actively in the international negotiations on climate change, and after Kyoto in 1997, initiated a national consultation process with the provinces and territories, businesses and key stakeholder groups. Since Kyoto, annual "Joint Ministers Meetings" of federal, provincial and territorial energy and environment ministers have examined the impacts, costs and benefits of implementing the protocol, as well as options for meeting Canada's target. In 2000, they agreed on a broad *National Implementation Strategy* on climate change. Canada's First National Climate Change Business Plan was also released. The business plan includes the federal government's Action Plan 2000 as well as action plans from Quebec, Ontario, British Columbia and the Northwest Territories.[5]

Following the recent agreement in Bonn, Canada stated that it would embark on consultations with the provinces and territories, the private sector and stakeholders in advance of a decision, perhaps in 2002, on ratification of the Kyoto Protocol.[6]

Canada's Emissions Projections: Business as usual vs Kyoto Protocol



Source: Analysis and Modeling Group, National Climate Change Process. *Canada's Emissions Outlook: An Update*. Natural Resources Canada. December 1999. p.42. http://www.nrcan.gc.ca/es/ceo/outlook.pdf.

5 Each of these documents can be found on the Web site of the National Climate Change Process at http://www.nccp.ca/NCCP/joint_ministers/index_e.html.

6 See for example, a transcript of a media interview with Deputy Prime Minister Herb Gray, July 23, 2001, at http://www.ec.gc.ca/cc/cop6/press/0101723_t_e.htm.

Canada in North America

Although the administration of President George W. Bush has stated that it does not intend to ratify the Kyoto Protocol, the U.S. has ratified the United Nations Framework Convention on Climate Change and consequently must develop its own plan to address climate change. The June 2001 report to President Bush by the National Academy of Sciences reinforced the position that, regardless of any rejection of the Kyoto Protocol's terms, action in one form or another on climate change is essential.

Due to our close economic relationship, Canada should coordinate its climate change policies with those of the U.S. to the greatest extent possible. This has particular implications for current plans to expand the Canada/US/Mexico trade relationship in the energy sector. The approach that should be advocated by Manitoba on this issue would be to ensure that climate change issues are brought front-and-centre into any discussions among the three countries on a continental energy policy. The consideration of a coordinated energy policy should be prefaced by assurances of effective emission-restraint measures in all three countries.

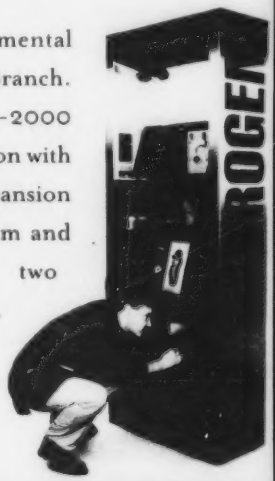
Manitoba's Role

Several initiatives to address climate change are already underway in Manitoba. In January 2001, the government of Manitoba announced the establishment of the Manitoba Climate Change Action Fund. This four-year, $1 million program supports Manitoba organizations interested in undertaking projects related to climate change education and outreach, impacts and adaptation, technical innovation and energy efficiency.

Manitoba Conservation hosts both the Inter-Departmental Committee on Climate Change and the Climate Change Branch. Some of the programs supported by the branch include the R-2000 Home Program, collaboration with Manitoba Hydro in the expansion of the Power Smart Program and the demonstration of two gas-electric hybrid vehicles.

Manitoba Hydro
POWER SMART

Courtesy of Manitoba Hydro.

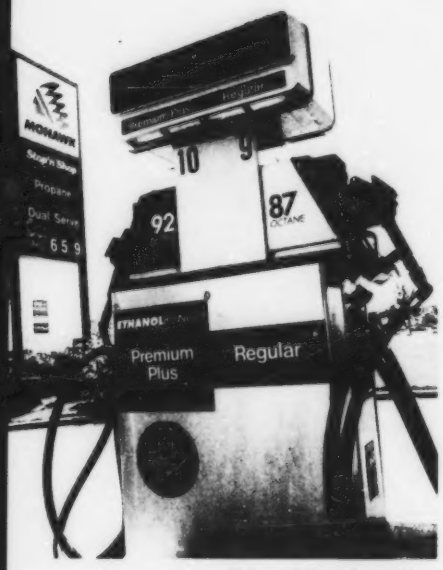


Manitoba Success Story – The Kraus Group

The Kraus Group is a Manitoba based company that has expanded into environmentally efficient technologies and equipment. Alternative fuels are widely used and Kraus has either constructed or has contracts to construct fuel-dispensing outlets in countries all around the world. Demand for clean alternative fuels — such as propane, natural gas and compressed hydrogen — continues to grow, especially as countries work to lower urban air pollution and reduce their greenhouse gas emissions.

The Kraus Group has translated that demand into recent successes, such as building the two largest compressed natural gas (CNG) refueling outlets on the planet in Mexico City. Each outlet has the capacity to service 1,600 vehicles a day. Currently, the outlets are fuelling a fleet of police cars and natural gas converted buses. Future plans in Mexico City call for the construction of another 100 CNG outlets over five years. The Kraus Group is the principal partner in this project and its participation will help Mexico City address its staggering air pollution problem.

www.krausindustries.com



Ethanol blend gasoline
Courtesy of Husky Energy.

Other provincial departments have also been active in addressing climate change. Manitoba Agriculture and Food, for instance, established the Climate Leadership in Manitoba Agriculture program in 1999 to support climate change mitigation, adaptation and awareness activities. Other departments have supported research on climate change and participated in the national climate change process. Manitoba Hydro has converted its Selkirk coal powered station to natural gas, an investment in efficiency which will result in real greenhouse gas emissions reductions.

Manitoba's non-governmental organizations have been active in raising awareness of climate change issues and promoting reductions in greenhouse gas emissions. For instance, the Centre for Indigenous Environmental Resources provides technical analysis on climate change for aboriginal communities and governments; Resource Conservation Manitoba annually organizes Winnipeg's Green Commuter Challenge; and the International Institute for Sustainable Development engages in climate change policy initiatives at the international, national and provincial level.

Various specialists within the Manitoba, Winnipeg and Brandon universities are undertaking research on climate change issues. Institutes throughout the province, such as the Churchill Northern Studies Centre, are also undertaking studies.

There are some notable examples in Manitoba's business sector of firms that are also addressing climate change. Hudson Bay Mining and Smelting, for example, has reduced its carbon dioxide emissions to 34 per cent below 1990 levels.[7] Our province also benefits from the presence of Kraus Group, a designer, manufacturer and exporter of alternative energy refueling stations and New Flyer Industries, which manufactures a wide range of transit buses powered by various forms of energy, including diesel-electric hybrid, compressed natural gas and liquid natural gas.

7 Mining Association of Manitoba. Presentation to the Manitoba Climate Change Task Force. May 10, 2001.

Municipalities

Across Canada, many municipal and regional governments are taking a forward-thinking approach to climate change through the Partners for Climate Protection Program. This program brings together municipal and regional governments from across Canada and encourages them to undertake a sustained effort to reduce emissions. Its ultimate goal is to reduce greenhouse gas emissions from municipal operations to 20 per cent below 1990 levels within 10 years of joining the program, and to reduce community-wide greenhouse gas emissions at least six per cent below 1990 levels within 10 years of joining the program. When urban areas work to adapt to and mitigate the impacts of climate change, they ultimately benefit by creating communities that are more energy efficient, healthier, better planned and less dependent on the automobile for transportation needs. Manitoba members of Partners for Climate Protection include Winnipeg, Swan River, The Pas and Virden.[8]

8 Further information about this program can be found at http://www.fcm.ca/newfcm/Java/frame.htm

Partners for Climate Protection Program

Partners for Climate Protection (PCP) is a national program that brings Canadian municipal governments together to reduce the local production of greenhouse gas emissions and improve quality of life. It is a partnership between the Federation of Canadian Municipalities (FCM) and the International Council for Local Environmental Initiatives (ICLEI) — the international environmental agency for local governments. Over 80 municipal governments belong to PCP, and participation is constantly growing. As PCP members, Canadian municipalities belong to a large international network of local governments taking steps to combat climate change.

The PCP program helps Canadian municipalities prepare and implement local climate action plans. In doing so, PCP directly supports community sustainable development across Canada. PCP provides members with services such as advocacy tools, training and workshops, research, networking and recognition in their quest to achieve tangible reductions in local greenhouse gas emissions. Software models, model documents, information and case studies are also available.

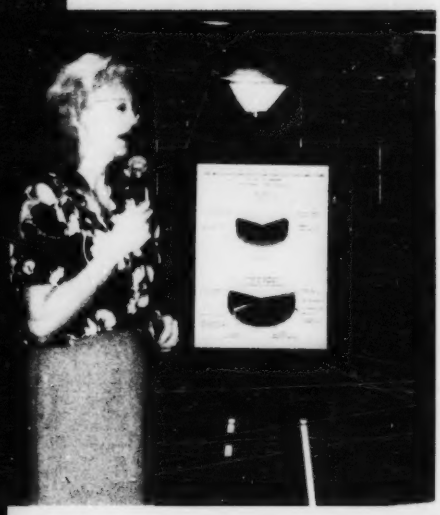
According to PCP, "when municipalities reduce greenhouse gases they can save money, cut local air pollution that leads to smog, acid rain and health problems, create jobs and stimulate community economic development." They also contribute to Canada's international commitment to reduce greenhouse gas emissions globally.

www.fcm.ca/scep/support/PCP.pcp_index.htm

Who the Task Force Heard From

"We have a strategy of working in harmony and with balance with the gifts that have been bestowed upon us. We believe we can help in building such an understanding for a much broader based approach. We believe that our own experience and approach could become a model for moving forward with fairness and justice on crucial environmental issues, affecting our territory and the world beyond."

Tataskweyak Cree Nation



The Manitoba Task Force on Climate Change was charged with the responsibility of collecting information, views and recommendations from Manitobans regarding how the provincial government should proceed as it develops an action plan to address climate change. To foster the involvement and input of Manitobans, the task force undertook a series of formal public meetings, established its own Web site and solicited presentations from specific experts, the general public and youth.

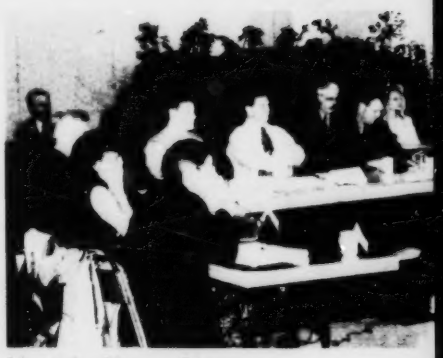
Three public meetings were held as part of the task force's activities. The first of these meetings took place in Winnipeg during the evening of May 10 and on May 11. Thirty-two presentations were made during these two days on behalf of environmental, aboriginal, agricultural, mining and industrial organizations. The task force also heard from the city of Winnipeg, the Winnipeg and Manitoba Chambers of Commerce and researchers from the Universities of Winnipeg and Manitoba.

On May 17, the task force held a public session in Brandon. This public consultation provided the task force with a greater opportunity to hear from members of the agricultural community, particularly about issues related to carbon sequestration in soils. Industry and construction representatives, climate researchers and environmental organizations also made presentations.

The final public consultation took place on June 13 in Thompson and provided an opportunity for the task force to focus on issues of particular concern to northern Manitoba. During this day, the task force heard from representatives of various community economic development organizations, the transportation and forestry industries, aboriginal communities, the town of Churchill, northern researchers and Manitoba Hydro.

Through the public consultation process, it became clear to the task force members that they required more in-depth knowledge about specific issues of particular relevance to Manitoba. In response, the task force invited experts to make presentations on June 8 and 14 on agriculture and sinks, continental electricity issues, biofuels and hydrogen, northern transportation and hydro reservoirs.

Youth perspectives on climate change were gained through an Envirothon Youth Climate Change session held in Brandon on May 26 and a Youth Forum on Climate Change held at Grant Park High School in Winnipeg on June 14. Input from young Manitobans was also encouraged in the establishment of a youth Web site through which they could e-mail submissions and complete an on-line workbook.



Manitoba Climate Change Task Force in Thompson

Several Manitobans and organizations also provided written submissions to the task force, either by mail or e-mail. These submissions, along with those received through the formal public hearing process and from the invited experts were posted on the task force's Web site. This Web site was established to facilitate greater public involvement in the work of the task force, and provided information about its activities and downloadable copies of Manitoba and Climate Change: A Primer and its companion workbook.

The high level of knowledge demonstrated by all of the participants, and their thoughtful recommendations, provided the task force with important material for consideration as it developed this report. A list of all individuals and organizations that provided submissions to the task force is found in Appendix 3. The task force members are grateful to these individuals and organizations for their contribution.

In addition to receiving information from the public, the task force received critical input from provincial government officials working on climate change in their individual departments. These individuals came together to form a working group representing various provincial departments (Appendix 5 provides a list of working group members). This working group provided the task force with information about the current status of climate change activities in the province, potential impacts and knowledge gaps. It also made sectoral recommendations on how the province could respond to the issue of climate change.

What was Said

"Governments must use a multilateral approach and apply sustainable development principles when developing strategies to deal with greenhouse gas reductions."

Weldon Newton • Keystone Agricultural Producers

"We believe the major challenge in front of the task force is to describe the opportunities/challenges to individuals and groups in enough detail to raise their awareness yet empower them with a set of expected conditions."

Marsha Sheppard • Manitoba Chamber of Commerce

Although a diversity of opinions, perspectives and recommendations were presented to the task force, a number of common themes emerged through the discussions:

Action on climate change is needed now. It was made clear to task force members that the impacts of climate change are being felt in Manitoba, as evidenced by conditions such as the unpredictability of the season for winter roads. Manitobans stated that immediate efforts must be made to address these current concerns while also developing plans to tackle the future implications of climate change. They suggested that climate change impacts be taken into consideration as the provincial government develops plans to address current priorities, such as the on-going crisis in the agricultural sector and the need to improve flood protection in the Red River Valley.

The government of Manitoba needs to take a leadership role and act to address climate change challenges and take advantage of emerging opportunities. Several participants in the task force meetings called upon the provincial government to demonstrate its commitment to action on climate change by taking steps to reduce its own greenhouse gas emissions and prepare more deliberately for the changing climate. It was also recommended that the government of Manitoba take a more active, positive role on the national and regional stage.

Both mitigation and adaptation strategies need to be implemented to effectively respond to climate change. Manitobans acknowledged the need to reduce our own greenhouse gas emissions, as well as contribute to global mitigation efforts and demonstrate our commitment to this issue. At the same time, it was recognized that the process of climate change has already arrived, and the province needs to adopt strategies that will minimize potential impacts on our natural environment, health and economy and take advantage of emerging opportunities.

Real reductions in greenhouse gas emissions are required. Through their presentations, concerned Manitobans called upon the provincial government to reduce

Youth Forum

Young people were asked to become involved in the work of the task force by providing comments and ideas on how Manitoba should respond to climate change. An on-line workbook was developed and placed on the task force's Web site, through which youth could express their views. As well, young Manitobans participated in an Envirothon Youth Climate Change session on May 26 at Brandon University, and in a Youth Forum on June 14 at Grant Park High School in Winnipeg. Premier Gary Doer and task force Chair Lloyd Axworthy attended the Winnipeg forum and took part in the discussions with young people from around the province. Many interesting ideas emerged from the participants, including:

- It should be provincial government policy that all government vehicles use hydroelectric power, fuel cells or ethanol.
- Manitobans should be encouraged to buy energy efficient homes that are insulated and use solar power and/or geothermal energy. The government should use energy efficient technologies in new buildings, to demonstrate that they really work.
- The government of Manitoba should conduct a major educational campaign on climate change, one that highlights its problems and its solutions. More education is needed so that people learn that there are more energy alternatives and that using them can save Manitobans money.
- The government should set emissions standards, and those who do not comply should be fined.
- The public should be encouraged to use biofuels as an alternative source of energy. Bio-diesel can be made from oil used by McDonald's or any other fast food restaurant that deep-fries food, and it is more efficient than regular gasoline.
- The government should do more research on fuel-efficient vehicles. The development of alternative fuel vehicles (e.g., hydrogen and electric) could be fostered through tax breaks, rebates and favourable loan repayment plans. As more of these cars are built, they will become less expensive.
- The cost of public transportation, particularly bus fares, should be reduced.
- Young Manitobans should write their MLA's, educate their parents and create links with schools to discuss the issue.
- Manitobans should reduce our energy use by recycling more instead of sending waste to landfills.
- A tax rebate should be provided to farmers who use zero tillage practices.
- Wetlands in agricultural areas should be promoted, and cattle production reduced.
- Better climate models and supportive computer software needs to be developed.
- Water from floods could be saved for use in droughts. The water table needs to be protected from pollution.

emissions not only on paper, but also reduce actual greenhouse gases in the air. Manitoba should focus on reducing greenhouse gas emissions within the province at their source, rather than avoiding emission reductions at home only by taking advantage of mechanisms such as emissions trading and clean development mechanisms.

Manitobans' understanding of climate change is not at the level required for serious engagement on this issue. Concern was expressed about the public's lack of understanding of climate change issues and their implications. There was a widespread desire for more extensive and accurate information to be provided to the general public about the science of climate change, its relevance to the lives of Manitobans, and how this challenge can be overcome. Specific information tailored to the needs of different groups was also recommended.

A small but active community working on the issue of climate change is present in Manitoba, but lacks coordination and internal connectivity. Although impressed with the level of expertise on the issue of climate change demonstrated by presenters, the task force found that there was a general lack of communication between individuals and organizations working on this issue, both within and between these groups. The task force felt that members of Manitoba's climate change community, particularly those involved in academic and research work, too often work in isolation from one another and need to become more aware of each other's work.

Specific knowledge and information on climate change impacts and adaptation strategies appropriate for the Manitoba context is needed. Climate change researchers, in particular, noted the need for more concrete data on the predicted impacts for Manitoba as a whole and at the regional and local levels. A greater understanding of policy options to address climate change and technologies that support adaptation efforts, such as new crop varieties, was also recommended.

Our future economy will be based on the development of clean and renewable energy. Responding to climate change requires moving away from the fossil fuel based economic development that has characterized our industrialized society for the past 200 years. As highlighted by several presenters, Manitoba is well positioned to be on the leading edge of the development of this future economy due to an abundant supply of hydropower and significant biofuels potential.

Manitoba Hydro needs to be seen as an active and constructive leader in the development and deployment of alternative energy. Building on its history of providing clean, reliable and renewable electrical energy, Manitoba Hydro needs to position itself to be a leader in the new economy by developing new energy sources that build on Manitoba's existing strengths, such as biofuels, geothermal, hydrogen and solar energy.

People want to be involved and contribute to the development of a unique Manitoba approach to address climate change. Presenters clearly indicated that they are interested in contributing further to the development of the province's action plan on climate change.

A partnership approach will be critical to mobilize resources to tackle climate change and the government of Manitoba needs to facilitate this approach. Presenters to the task force noted that a partnership approach will allow for more effective implementation of Manitoba's climate change strategy by increasing the sharing of knowledge and ideas, taking advantage of the strengths of different stakeholders, and ensuring a more inclusive process. For instance, the task force was told by experts in the field that Manitoba will have to resolve outstanding issues with Aboriginal bands related to past hydro projects if it hopes to expand its power exports into markets where such matters are highly controversial. The steps being taken by Manitoba Hydro to build partnerships with Aboriginal participation for future hydro development were suggested as being valuable and laudable.

Awareness of federal climate change policies is currently limited. Although a few presentations made some reference to the on-going national process to address climate change, it was apparent that the national climate change programs have little relevance to Manitoba, and few organizations in the province were able to qualify for involvement in partnerships or obtain support by federal government funding.

Visible federal greenhouse gas initiatives currently do not exist in Manitoba. Among the various programs and action items included in the National Climate Change Process' Business Plan to address climate change released in October 2000, none is specifically led by Manitoba, although the provincial government is a participant in some of these initiatives. As well, few Manitoba-based organizations have sought and received funding from the federal government's Climate Change Action Fund.

Financial resources to support greenhouse gas reducing investments and long-term research on climate change are currently lacking. Several potential users of emission reducing and energy efficient technologies noted that the longer payback periods of capital investments in energy efficiency technologies and processes limit their ability to receive financial support. Members of the academic community and non-governmental organizations emphasized the need for stable, long-term funding to support research on the impacts of past climatic events, changes at the regional and local level, and development of appropriate adaptation strategies.

Based upon its consultations and internal discussions, the task force recommends that the following principles guide the government of Manitoba as it develops its plan of action to address climate change:

- The task force agrees that the government of Manitoba should continue its support of the 1992 United Nations Framework Convention on Climate Change and **continue to promote ratification of the Kyoto Protocol by Canada.**

- The task force notes that **meeting the Kyoto targets is a modest first step** towards tackling the issue of climate change. Government and others should recognize that much more significant greenhouse gas reductions are required to address the mounting threat of climate change.

- The task force agrees that **Manitoba must lead by example** to address the challenges and capture the opportunities created by climate change.

- The task force agrees that **Manitoba is well positioned**, perhaps better than most provinces, to deal with climate change in that the solutions require:

  – a future economy built on clean, renewable and dependable energy;

  – decreased energy use in individual, community and business activities; and

  – a provincial government that embraces the principle of sustainability in policy-making and program delivery.

  Engaging in development that reflects these current strengths within Manitoba provides the province with the potential to create a future economy that should attract people, business and investment.

- The task force recognizes that **any effective North American climate change action plan must involve climate change commitments by the United States in conjunction with any new coordinated energy policy.** Manitoba and Canada should work with Mexico and the United States to ensure that climate change issues are addressed and incorporated as a prerequisite for adoption of any North American Energy Policy.

- The task force recognizes that **Manitoba should take a regional approach** to dealing with climate change due to the synergies available for a common eco-system approach and the presence of existing intergovernmental relationships with our Prairie, Great Plains and northern neighbours, such as Nunavut.

- The task force agrees that **Manitoba should promote opportunities to undertake Clean Development Mechanism and Joint Implementation projects** through our well established economic, social and cultural relationships with: other countries (e.g. Ukraine); twinned cities (e.g. Cheng Du); and other regions (e.g. Nunavut). The government should also promote associated institutional relationships, such as with the Instituto Tecnológico de Estudios Superiores de Monterrey, and Manitoba-based organizations like the International Institute for Sustainable Development and the University of Manitoba Transport Institute.

- The task force agrees that **Manitoba must encourage the federal government to address the conflict between Canada's commitments under the Kyoto Protocol and its support of fossil fuel energy developments**. Manitoba should promote a requirement that any direct and indirect federal support of fossil fuel megaprojects be offset by equivalent real greenhouse gas reductions or by funding alternative energy projects. These latter projects could include Manitoba-based renewable energy developments and national electrical infrastructure developments, including the development of a transmission link between Manitoba and Nunavut.

- The task force observes that **leaving the responsibility for addressing climate change within one department of the provincial government is ineffective**. Climate change involves a pan-government set of activities and policy changes that are beyond the capacity of one department to achieve. The current organizational structure of the Manitoba government does not lend itself to dealing with a new set of issues of this sort. To cope with the institutional response to climate change, the government of Manitoba needs an innovative internal arrangement for interdepartmental cooperation, policy development, capacity building, partnership development and leverage of funding.

- The task force emphasizes the importance of **developing research capacity to carry out micro-level and regional impact analysis of climate change**, in order to make information available for effective mitigation as well as public awareness of local conditions and trends.

- The task force proposes that **Manitoba Hydro, as a public utility and a major player in the energy sector, should demonstrate leadership in addressing climate change**. It should therefore invest a portion of its significant export revenue to support Manitoba's mitigation and adaptation initiatives.

The task force believes that the future of Manitoba's citizens, businesses and environment depends on a willingness to deal with both the global and local challenges of climate change. We note that the economic and social forces of the past, which have resulted in activities that promote global warming, should now be refocused to deal with the emerging imperatives of minimizing consumption of resources while maximizing efficiency and competitiveness.

The task force has identified a balanced approach in its advice for dealing with climate change that necessarily involves leadership by government to set an example and demonstrate a course of action through practice, governance and policy. The task force is similarly challenging Manitoba Hydro to act in the same fashion, recognizing that our ability in this province to deal with climate change is directly related to how we develop and use our clean and renewable energy.

Other strategic recommendations deal with the need to engage all Manitobans in this issue through education, training and outreach. They also emphasize addressing early action in the northern region and with Aboriginal peoples, as well as the high priority of two key areas: urban issues and opportunities arising from early action with carbon sinks and emissions trading. The final recommendation deals with the importance of partnering with all stakeholders to achieve success.

Manitoba Conservation's hybrid electric vehicle

Lead by Example in Government Operations

The government of Manitoba has the opportunity to act quickly to demonstrate its leadership and commitment on climate change by taking decisive steps within its own departments and agencies. In addition to providing a clear public message, such steps would introduce a "culture" of sustainable development and raise the civil service's capacity to deal with climate change.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Set real greenhouse gas reduction targets for government operations, as well as require the immediate baseline measurement of greenhouse gas emissions produced by government departments and agencies.

Set requirements for the analysis and measurement of climate change impacts in all major infrastructure projects receiving public funds, such as the Centennial Library extension and the new True North Entertainment Complex in Winnipeg.

Take measures within government of Manitoba operations to both reduce greenhouse gas emissions and demonstrate Manitoba's mitigation capabilities in this area including:

- Requiring the purchase of ethanol blended gasoline where available for all government fleet gasoline vehicles;
- Utilizing the large government light and heavy-duty vehicle fleet to demonstrate Manitoba-based or value-added greenhouse gas reducing fuels and technologies;
- Retrofitting government buildings to reduce costs through energy efficiency and to demonstrate Manitoba-based building expertise, technologies and products;
- Enhancing the current Green Procurement Initiative by including more specific greenhouse gas reduction criteria in purchasing decisions; and
- Accelerating implementation of electronic delivery of government services and information, with consequences such as reducing the need for Manitobans to travel to provincial offices.

"Government must play a leadership role in responding to climate change – leadership by example and leadership by investment. Government must show its commitment to climate change through public-private partnerships and leveraging public dollars to affect positive changes to the way we live while delivering measurable and financially sound results."

Jim Kohut • Kraus Group

Lead by Practice in Governance

The task force recognizes that the government of Manitoba has recently initiated some notable climate change activities. There is an urgent need for the government to incorporate climate change impacts more formally into its decision-making in a comprehensive and rigorous way.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Require climate change impact statements for all Treasury Board and Cabinet submissions, legislative and regulatory proposals and intergovernmental activities.

Require all departments to consider greenhouse gas impacts, in addition to current environmental assessment criteria, in their evaluation processes as well as specifically addressing climate change as a strategic objective in departmental business plans and budgets.

Use and strengthen existing legislation to implement provincial objectives related to greenhouse gas reductions, including two key provincial acts:

- The Manitoba Sustainable Development Act to set greenhouse gas targets and indicators, require annual reports on progress, ensure that an evaluation framework is implemented and require engagement of the public; and,
- The Manitoba Energy Act to implement greenhouse gas reducing energy initiatives, such as setting more stringent energy efficiency codes for appliances and buildings, requiring sustainable development plans from Manitoba energy utilities, supporting the use of alternative transportation fuels and setting energy export transmission fees.

Enhance and strengthen the role of the Emergency Management Organization to both plan for and deal with severe climate change impacts in Manitoba including immediately undertaking a comprehensive risk assessment of the increasing impacts expected of floods, forest fires, tornadoes and other extreme weather events.

Lead by Practice in Provincial, Federal and Regional Cooperation

The government of Manitoba should adopt an enthusiastic and constructive role in the national climate change debate, particularly with respect to Canada's other provinces and territories.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Assume a leadership role in supporting Canada's climate change response by:

- Strongly endorsing the need for quick ratification of the Kyoto Protocol following an effective but swift national consultation process;
- Acting as an advocate to make federal climate change funding programs more readily available to Manitoba stakeholders, including urban and rural municipalities, northern and remote communities, labour, youth and business interests;
- Initiating a regionally based approach to climate change action that includes emissions trading and carbon sinks for the Prairies, and collaboration on mid-continent corridor initiatives to reduce greenhouse gases;
- Examining agricultural income support programs to ensure they contribute to climate change action while enhancing farm livelihoods;
- Promoting a co-operative regional approach in micro-level scientific analysis and studies for the Prairies and the North, given that we share an ecological footprint; and
- Aiding businesses as they develop sectoral plans for their industries to anticipate and adapt to climate change effects.

Assert a more definitive role for the provinces as the key jurisdictions positioned to ensure the implementation of Canada's Action Plan on climate change.

Establish with the federal government a new national climate change infrastructure partnership to promote transportation, water management, energy supply and other projects that contribute to greenhouse gas reductions and adaptations to climate change.

With the government of Canada, explore ways to work with the United States and Mexico to develop continental plans for a greenhouse gases emissions trading regime that will operate in parallel with a North American energy program.

Lead by Practice in Public Policy

Climate change is more than an environmental issue. It will be one of the most important public policy challenges faced by Manitoba in the foreseeable future. In order to deal effectively with climate change, the task force recognizes that government policy related to energy, the economy and the role of fiscal and financial instruments must be reformulated.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Immediately develop an energy policy, given that energy will be a key determinant of Manitoba's ability to address provincial and national climate change objectives. Other than one ethanol plant, Manitoba does not have any significant capacity in alternative energy sources, such as biofuels, hydrogen, cogeneration, wind and solar. Manitoba's energy policy development process must address:

- Manitoba's ability to ensure the province's future energy needs are met through development of renewable and alternative energy options;
- How Manitoba Hydro and its subsidiary, Centra Gas, should participate in Manitoba's energy future, by immediately conducting a review of the Manitoba Hydro Act to ensure that our key energy provider is responsive to the overall interests and future of Manitobans;
- Manitoba's role in influencing and shaping Canada's energy policy, including how Manitoba can best position and lever its clean energy export potential in the development of a continental energy program;
- The maximization of Manitoba's clean energy sector as an economic development tool, especially in the areas of biofuels and hydrogen; and
- The research and development needs for Manitoba to achieve its sustainable energy objectives.

Adopt economic development policies that recognize that a comprehensive climate change action plan requires both the participation of Manitoba's key economic sectors and the integration of our industry development strategies by:

- Ensuring all current government economic development policies and initiatives, such as the recent Energy Intensive Initiative, comply with and support the objectives of sustainable development and reduction of greenhouse gas emissions;
- Reducing the future energy intensity of Manitoba industry while maximizing employment opportunities;
- Assisting the private sector to act on the priorities and opportunities that are available to Manitoba business for both climate change mitigation and adaptation activities;

Environmentally Sensitive Areas Tax Credit

Environmental tax credits, which compensate and recognize landowners who carry out conservation practices, is one instrument that can be used to correct the distorted market structure associated with ecological goods and services. The Manitoba Climate Change Task Force applauds the government of Manitoba's initiative to introduce an Environmentally Sensitive Areas Tax Credit. A pilot program in partnership with the Northwest Soil Management Association, Prairie Farm Rehabilitation Administration, Ducks Unlimited Canada, Manitoba Conservation's Sustainable Development Innovations Fund, and the Rural Municipalities (R.M.s) of Mountain North and Strathcona was undertaken in Manitoba. The pilot was designed to evaluate property tax credits as an economic instrument to promote environmental stewardship at the landscape level and to determine the effectiveness of a $1/acre property tax credit offered to all landowners in the two R.M.s. Specifically, the partners determined that landowner attitudes and subsequent behaviour could influence the provision of ecological goods and services through nominal incentives.

Historically, conservation programs paid landowners to complete a pre-approved conservation project. Although this method of programming can be effective, it generally required a relatively large amount of funding per project (i.e. landowner); consequently, the number of projects that could be funded was limited. This made the programs restrictive in their ability to reach a wide range of landowners and have an impact at a landscape level. Also, traditional conservation programs were often structured in a way to restore natural functions that were lost as opposed to conserving existing natural ecosystems. The Environmentally Sensitive Areas Tax Credit has been designed to address these issues.

The two participating R.M.s in the pilot offered the credit on municipal land taxes to all eligible landowners for one or more particular conservation practices. Eligible land uses include the protection of, or conversion to native grassland, tame forage, wetlands, riparian buffer zones and a minimum of 40 per cent residue cover on cropland available in the spring. A satellite image of each R.M. was acquired annually and the appropriate ground truthing was performed to confirm the eligibility of each application. Landowners received the credit on eligible land when they paid their land taxes.

- Developing a strategic economic cluster around "clean and renewable" energy feedstocks and technologies;
- Directing departments and agencies responsible for agriculture to immediately address: climate change issues of carbon sinks; strategies to deal with increasing animal emissions; and, accelerated implementation of best management practices in agricultural production;
- Directing departments and agencies responsible for transportation to immediately address the policies and programs that can lead to real greenhouse gas reductions and to the protection of Manitoba's infrastructure, such as winter roads, most vulnerable to climate change impacts; and
- Directing departments and agencies responsible for forestry to immediately address key climate change issues of carbon sinks and boreal forest impacts.

Assess the use of fiscal and financial instruments and options to accelerate the introduction of greenhouse gas reducing activities and behaviours by:

- Using the principle of tax shifting to reward greenhouse gas reducing outcomes and discourage greenhouse gas producing activities where effective alternatives exist. The precedent exists in Manitoba in the ethanol portion of gasohol being currently exempt from the provincial excise tax on gasoline;
- Using financial incentives to implement greenhouse gas reducing technologies, processes and services;
- Working with Manitoba labour and venture funds, such as Crocus and Ensis, to determine their role and participation in innovative financial approaches to funding greenhouse gas reducing industrial development opportunities, including alternative energy ventures; and,
- Supporting revenue generation alternatives, such as a dedicated urban transportation fuel tax to fund urban transit improvements, required to deal with greenhouse gas reductions in our urban centres.

Lead by Practice – Manitoba Hydro

Manitoba Hydro has served Manitobans well by providing reliable, renewable, and inexpensive electricity for decades. It is currently addressing its use of fossil based thermal generation and has endorsed a strategy to reduce its greenhouse gas emissions six per cent below their 1990 level by 2010. With the recent acquisition of Centra Gas, Manitoba Hydro now delivers approximately 60 per cent (25 per cent from electricity and 35 per cent from natural gas) of Manitoba's energy needs. It is imperative that Manitoba Hydro plays a leadership role in ensuring Manitoba meets its greenhouse gas objectives.

THE TASK FORCE RECOMMENDS THAT MANITOBA HYDRO:

Recognize that it is an integrated energy corporation that could lead Manitoba into the carbon-constrained energy future by:

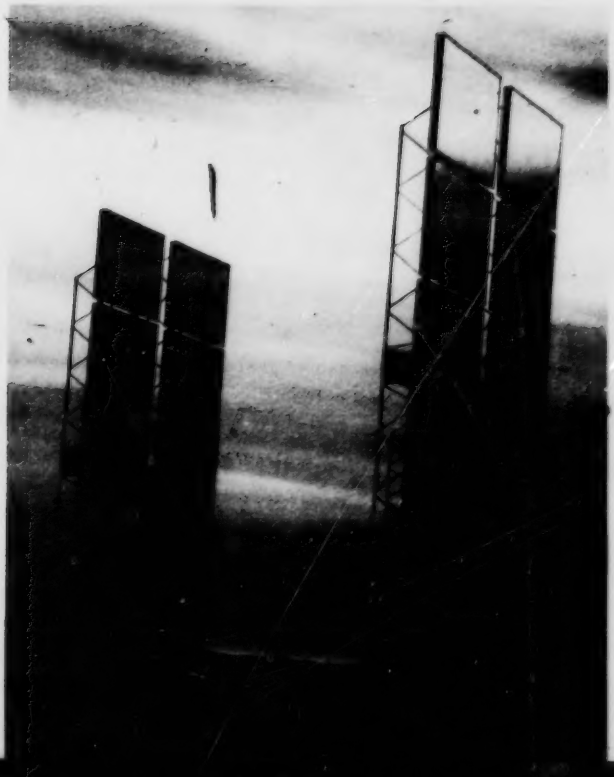
- Preparing a strategic plan that addresses climate change and the roles that electricity, natural gas and alternative energy will play;
- Significantly expanding its energy efficiency program incentives and benchmarking these programs against other leading utilities in Canada;
- Leveraging its expenditures on future climate change related programs with federal climate change action funds to the maximum extent possible;
- Immediately working with the federal government to provide clean, alternative and sustainable power to remote off-grid northern communities;
- Changing its approach with respect to purchasing from Manitoba energy producers, in order to stimulate alternative energy activities and export potential for clean power. The current practice of purchasing at the equivalent cost of production is a barrier to this option;
- Addressing the perception that Manitoba Hydro is not as visible or active as other provincial energy providers in addressing climate change;
- Actively working with the government of Manitoba to promote, develop and deliver an early regionally based emission-trading initiative, including the potential for creating a regime of clean export credits with its U.S. customers; and
- Ensuring a coordinated approach to energy efficiency programs between Manitoba Hydro and Winnipeg Hydro, a process that could be enabled by a merger of the two utilities.

Recognize that to develop significant additional hydroelectric generating capacity in Manitoba, Manitoba Hydro should:

- Ensure Aboriginal peoples' partnership in energy projects in an equitable, inclusive and timely manner;
- Immediately sponsor research to address climate change impacts on reservoirs and water levels; and,
- Actively participate in developing Canada's international emissions trading regime.

"Continue industrial initiatives like Manitoba Hydro-Power Smart Program. These initiatives not only realize immediate plant energy reductions but also allow Manitoba Hydro to export additional electricity, displacing carbon-based electrical power thereby reducing the CO_2 loading in the atmosphere."

Dennis Heinrich • Gerdau MRM Steel Inc.



Sources of alternative energy.

Develop an Approach to Sinks and Emissions Trading

The Manitoba Climate Change Task Force believes that the government of Manitoba should give high priority to the development of effective international and national emissions trading regimes that meet the needs of Manitoba business and reduce greenhouse gases. The task force recognizes that Manitoba is well placed to benefit from an effective emissions trading system, by nature of its potential to expand its clean and renewable energy supply, as well as the potential in its forest and agricultural sinks. An early voluntary national emissions trading program would pave the way towards establishing a national domestic emissions trading program in time for Kyoto targets becoming operational in 2008.

THE TASK FORCE RECOMMENDS THAT TO CAPITALIZE ON OPPORTUNITIES IN EMISSION TRADING AND SINKS, THE GOVERNMENT OF MANITOBA:

Work with the federal government to immediately establish and fund a voluntary national emissions trading regime.

Urge the government of Canada to establish international and North American emissions trading regimes that are both environmentally credible and economically efficient;

Assist Manitoba's private businesses and Crown corporations to become involved with voluntary and demonstration emissions trading initiatives in Manitoba, Canada and North America;

Establish a carbon trading and/or auctioning centre in Manitoba, or utilize a current commodity trading institution able to support emissions trading activities; and

Address the knowledge gaps related to determining Manitoba's potential for our forestry and agricultural sectors to participate in sinks and emissions trading opportunities.

Bonn Agreement

The agreement in Bonn reinforces the opportunities for Manitoba to help Canada meet its Kyoto target while benefiting the Manitoba economy. Under the Protocol and the Bonn agreement, Canada is entitled to earn emissions "credits" towards our Kyoto target for our management of forests and agricultural soils. Manitoba agriculture and forestry sectors could therefore benefit in a way that would also be consistent with sustainable agriculture and forestry practices.

Build Support for Action Through Outreach, Education and Training

In order to make informed decisions and prepare for the future, Manitobans need to have a better understanding of what climate change means, how it could affect them, and what the options are in dealing with it.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Initiate a comprehensive outreach process to raise the awareness of the public on climate change including:

- Monitoring the current state of the science and its implications;
- Listing activities currently undertaken and planned at the provincial, national and international levels;
- Engaging participants, such as environmental and farm organizations, business and labour associations and the Manitoba Round Table, to define Manitoba's action plan to deal with climate change;
- Enhancing and leveraging resources already in place such as the provincial agricultural extension offices to deliver information throughout Manitoba; and
- Supporting successful current climate change initiatives, such as Resource Conservation Manitoba's Commuter Challenge and Manitoba Public Insurance's transit pass program with Winnipeg Transit.

Integrate climate change into the curricula of our educational system including the primary, secondary and post-secondary levels to:

- Educate youth so that future generations are ready and equipped to deal with this issue; and
- Address the training requirements in our colleges and vocational schools to ensure that graduates have the technical skills to participate in emerging climate change business opportunities, such as in the building trades for energy efficiency in building construction.

Establish a Manitoba Climate Change Hub which will:

- Be a central information service available to all Manitobans which would act as a single window for all climate change information, research activities and funding programs; and
- Provide a link for schools, training centres, environmental organizations, health organizations, museums and research groups to allow for cooperation and greater information exchange on climate change matters.

"Education must play a key role in making all Manitobans aware of global warming. We must educate all levels of society beginning with our school age children K-12, post secondary and local residents. We also must continue the process with public and private industry."

Joseph (Sonny) Kline • Northern Association of Community Councils Inc.

"The bottom line is that there needs to be far more information provided to individuals in order for them to gain knowledge necessary to prepare for whatever the future has in store. Education of the masses must be much more than a few fliers in the mail or a few hard to understand scientific studies, but rather, a comprehensive community education initiative that will start from the grassroots level. In order to respond effectively to the challenges that lie ahead, everyone from children to elders must be educated in order to make the informed choices that will decide our future."

Darren Ottaway • The Town of Churchill

Hazards of winter roads

Address Aboriginal and Northern Concerns

Aboriginal people and other residents of the North live in the region most vulnerable to climate change. It has been said that the North represents Manitoba's "canary in the mine", and the early warning signals are becoming evident.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Acknowledge the unique challenges to northern and Aboriginal peoples, as well as the likely early impacts on this vulnerable region and its communities by:

- Consulting and documenting traditional knowledge to capture the historical record and evidence related to climate change; and
- Partnering with organizations, such as the Aboriginal People's Television Network and the Centre for Indigenous and Environmental Resources, to explain the experience and perspectives of northern peoples and climate change impacts in film and other media.

Implement renewable energy based systems to the four remote northern communities where hydroelectric service is not currently available through Manitoba Hydro's grid.

Develop a northern strategic initiative to deal with the unique northern climate change opportunities and challenges related to:

- An extended shipping season for the port of Churchill, and stabilization of the Hudson Bay Railway line that is affected by changing permafrost conditions;
- Winter road impacts;
- The anticipated shifts in employment in fishing, hunting, trapping and tourism opportunities available to northern residents;
- The need for a sub-arctic centre for northern climate change research that could be served by building on the existing strengths of the Churchill Northern Studies Centre;
- New opportunities for energy, trade, research and information exchange in Nunavut; and
- Industrial energy co-generation by northern mining companies.

Port of Churchill
Courtesy of OmniTRAX Canada.

Address Urban Issues

Over 70 per cent of Manitoba's population lives in the capital region and other Manitoba urban centres.[9] In order to address climate change, and specifically mitigation activities, it is essential that a significant component of our climate change initiatives be focused in urban areas. It is also noted that a major source of urban greenhouse gas emissions comes from the use of personal automobiles and poor urban planning.

Hydrogen bus
Courtesy of New Flyer Industries.

9 Statistics Canada. 1996 Census.

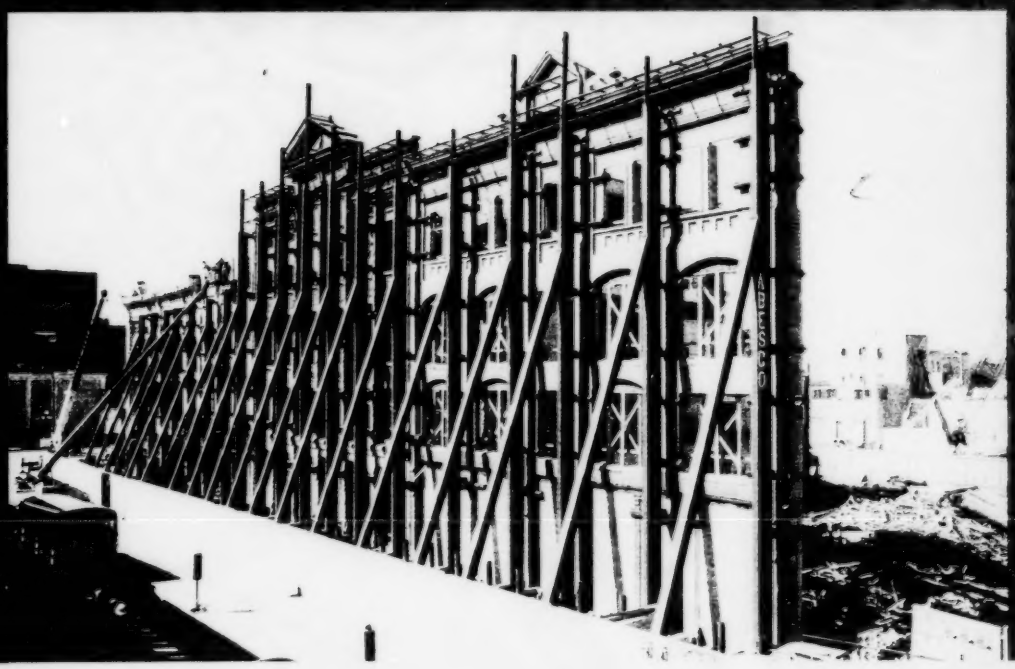
Red River College's Princess Street Campus

Truly a blend of the old and new, Red River College's new downtown campus will be a modern, state of the art facility that will compliment the historic façades of the Exchange District. Located on the west side of Princess Street between Elgin Ave. and William Ave. in Winnipeg, the new campus will be home to approximately 200 staff and 2000 students in modern media and information technology.

The $31.5 million, 225,000 square foot RRC's Princess Street campus will reuse and restore the façades and selected interiors of some of Winnipeg's oldest buildings. It will also incorporate modern energy efficiency features that encourage the use of natural light and energy from the sun before relying upon mechanical methods. A central feature of the campus will be atria that act as natural heat sinks. Each atrium will capture heat from the sun and the building for redistribution throughout the campus. The atria will be complimented by solar shades to reduce heat and glare, and operable windows. As well, light shelves will be placed on the inside of south facing windows to reflect light deep into rooms, reducing the need for artificial lighting.

While building the campus, the college is also striving to achieve a goal of zero landfill waste, and to purchase building materials within a 500-kilometre radius of Winnipeg to limit vehicle emissions. These features will enable the new campus to meet energy efficiency standards that are 40 per cent better than the model National Energy Code for Buildings. They will also reduce the downtown campus' operation and maintenance costs and create a healthier and more responsive environment for the college's staff and students.

www.rrc-pscampus.com



THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Partner with Winnipeg and other urban municipalities to develop greenhouse gas initiatives that promote sustainable cities through:

- Focusing development to maximize urban density, especially along transit corridors;
- Providing realistic options to stimulate alternatives to single occupant auto use including enhanced transit, and infrastructure for high occupancy vehicles, specifically the South West Transit Corridor that should be supported by all three levels of government;
- Requiring all new buildings to achieve energy targets 25 per cent above the model National Energy Code for Buildings; and
- Linking provincial funding to greenhouse gas emission reduction plans and measurements.

Assist municipalities to secure federal climate change funds, such as the Partners for Climate Protection and the Urban Showcase programs.

Support urban transportation fuel taxes and transit pass incentive programs to encourage behaviour change and provide revenue for greenhouse gas reducing programs.

Partner to Address Climate Change

The success of Manitoba's efforts in dealing with climate change will be determined to a large extent by the partnerships it establishes. The government can lead and encourage, but action must ultimately be taken and carried out with those groups best positioned to implement real change. A significant number of groups are already engaged in various initiatives that should be enhanced and coordinated.

THE TASK FORCE RECOMMENDS THAT THE GOVERNMENT OF MANITOBA:

Initiate a comprehensive approach to establish Manitoba's greenhouse gas agenda by:

- Creating a Manitoba-based research collaborative founded on existing expertise, knowledge and capabilities of academia, research institutions, private interests and all levels of governments;
- Identifying short, medium and long-term research priorities; and
- Investing immediately in the Prairie Adaptation Research Collaborative to begin addressing Manitoba's research priorities.

Use existing trade and transportation corridor partnerships to encourage reduction in greenhouse gas emissions by:

- Implementing the Green Corridors Initiative;
- Continuing to lead and implement the North America Super Highway Coalition alternative fuels initiative; and
- By working with the Red River Valley Clean Cities Coalition to advance the use of alternative transportation fuels across our region.

Partner with key organizations to ensure all are engaged early and effectively based on their needs and abilities by:

- Supporting current Manitoba-based institutions, such as the International Institute for Sustainable Development and the Mennonite Central Committee, that can not only assist with Manitoba activities, but have the capability to develop and market their services and expertise to other regions and countries;
- Working together with labour and industry associations to support their efforts in reducing greenhouse gas emissions and developing new related market opportunities; and
- Carrying out an annual public review and consultation to measure progress towards achieving tangible climate change objectives, possibly through a public forum similar to the one held earlier this year by the Clean Environment Commission.

"We must move towards the establishment of research programs, or research centres, seriously committed to finding answers to some of the questions asked by those who would likely be impacted by climate change."

Danny Blair • Climatologist

The Green Commuter Challenge

Commuting by car is the largest single source of greenhouse gas emissions in Manitoba. GHG emissions are causing global climate disruption, other automobile emissions are fouling our air, and, as workers, we are increasingly sedentary and stressed out.

Organized by Resource Conservation Manitoba, the Winnipeg Commuter Challenge is a workplace based alternative transportation challenge. It is a friendly five day competition to see how many individuals in workplaces and schools in Winnipeg can adopt alternative forms of transportation to get where they're going. Results are compiled for each organization that registers, showing the reduction in vehicle emissions from employee's collective choices of alternative transportation.

Each year, during the first week of June, Winnipeggers walk, roller blade, cycle, carpool and ride the bus to work. For each day they participate, their workplace will be awarded points in a friendly competition with other local companies. The totals for Winnipeg Green Commuter Challenge will decide the winner of the national Green Commuter Challenge, with other Canadian cities such as Edmonton, Regina, Calgary, Vancouver, Ottawa and Toronto.

The task force has strongly recommended that the government of Manitoba lead by example and take immediate action. However, it is difficult to lead when the government is not structured to meet this sort of unique challenge. The far-reaching, interconnected and diverse nature of climate change cannot be addressed successfully if efforts continue to be undertaken within the traditional "silos" of individual departments and agencies. A more integrated approach is required, and an innovative organizational arrangement within the Manitoba government is necessary.

To respond to climate change and maintain the momentum generated by this task force, the government of Manitoba should immediately:

Establish a Climate Change Initiative office that will report directly to the Executive Council. This unit will work across government to bolster and coordinate efforts currently being undertaken by various departments and agencies. The office will help ensure mobilization of the support, cooperation and dedication of resources required to develop and implement plans to reduce greenhouse gas emissions and adapt to climatic change.

Provide the Climate Change Initiative office with a mandate and resources to:

- Prepare a government-wide climate change policy based on the principles of sustainable development;
- Direct the preparation of the government of Manitoba's Climate Change Action Plan and engage stakeholders, particularly non-governmental organizations and the private sector, in its formulation;
- Coordinate the development of the energy and economic policies needed to ensure effective implementation of the government's action plan;
- Review and make recommendations regarding required enhancements to the Emergency Management Organization, *Sustainable Development Act, Manitoba Energy Act* and other Acts;
- Work with Manitoba Hydro on the development a climate change action plan for the utility;
- Establish partnerships with all stakeholders to implement research, regional coordination, municipal cooperation and outreach initiatives;

- Leverage private sector investment in climate change initiatives; and
- Act in a timely manner to take advantage of opportunities arising from the federal government's climate change action plan and related funding.

Immediately direct the Manitoba Climate Change Initiative office to negotiate an innovative partnership with the federal government and municipalities to:

- Establish a multi-level partnership similar to the Winnipeg Development Agreement to deliver a Manitoba-based Comprehensive Climate Change Partnership. Assemble funding of approximately $25 million over five years from Manitoba Hydro and other sources in order to fund the province's initial contribution to this joint federal/provincial/municipal climate change initiative of approximately $75 million over five years;
- Establish the new partnership's objectives, management structure, program delivery and funding requirements;
- Work collaboratively with Western Diversification to tailor an approach to addressing climate change that meets Manitoba's needs; and
- Take advantage of and implement current opportunities, particularly the Urban Showcase Initiative, the Canadian Transportation Fuel Cell Alliance and the Prairie Adaptation Research Collaborative.

A Last Thought:

"The best time to address this issue was 25 years ago; the second best time is today."

John Whitaker • Riding Mountain Biosphere Reserve Association

The speed and scale of climate change predicted for Manitoba is unprecedented in human history. To manage this change, it is crucial that Manitobans understand its implications, the need to take early action to reduce emissions and slow the rate of change, the importance of actively participating in national and international efforts and the necessity to begin the process of adaptation, especially in vulnerable sectors such as agriculture and forestry.

Manitoba is at a critical juncture in history. The choices we make today can help build a bright and prosperous future for Manitoba, one supported by an economy based on clean and renewable energy, strong and vibrant communities, and a healthy natural environment. To achieve this vision, the government of Manitoba must take a leadership role in partnership with citizens, communities, organizations and businesses already actively engaged in addressing the issue of climate change. Action on climate change now will be a wise investment in our province's future.

Appendix 1 – Glossary of Terms

Baseline Emissions • Emissions that would occur under a business-as-usual scenario. Baseline estimates are needed to determine the effectiveness of emissions reduction programs (often called mitigation strategies).

Biomass • The total quantity or weight of organisms in a given area or of a given species. Also refers to non-fossilized organic matter, particularly when referring to fuels.

Biomass Energy • Energy produced by the combustion of biomass, such as the burning of firewood. Combustion of both biomass and fossil fuels results in the release of the greenhouse gas carbon dioxide. Biomass combustion, though, is considered more sustainable as it releases carbon that has been stored for a relatively short period of time (e.g. 200 years for a tree) that will quickly be reabsorbed in the cycle of life (e.g. the growth of a seedling). In comparison, the burning of fossil fuels releases carbon that has been stored for thousands of years and cannot be quickly turned back into oil or coal.

Biosphere • The regions of the earth's crust and atmosphere occupied by living organisms.

Carbon Sequestration • The uptake and storage of carbon through natural processes. Plants, for example, absorb carbon dioxide and transform it into plant sugars that contain carbon.

Carbon Sinks • Biological systems that take in and store more carbon than they release. For instance, Canada's northern forests act as carbon sinks as the trees they contain take a long time to decay and release their stored carbon due to cold temperatures. Other carbon sinks include oceans, soils and wetlands. Carbon sinks can serve to partially offset greenhouse gas emissions.

Clean Development Mechanism • Article 12 of the Kyoto Protocol provides a mechanism whereby developed countries are able to invest in projects in developing countries that reduce greenhouse gas emissions. Developed countries can use the reduced emissions as credit towards their greenhouse gas emission targets. The details of how Clean Development Mechanisms will be used have yet to be negotiated at the international level. Currently, though, the protocol allows countries to use credits obtained through clean development projects to be used to meet their assigned targets. Participation is voluntary and open to private and public entities.

Climate • The average weather, usually taken over a span of 30 years, for a particular region and time period. Climate is not the same as weather, which describes the short-term state of the atmosphere. Rather, climate is the average pattern of weather for a particular region. Climatic elements include precipitation, temperature, humidity, sunshine, wind velocity, and phenomena such as fog, frost, and hailstorms. See also Weather.

Climate Change • A change in expected climatic conditions that is in addition to natural climate variability over comparable time periods. This change may be attributed directly or indirectly to human activity that alters the composition of the global atmosphere.

Climate Model • A quantitative way of representing the interactions of the atmosphere, oceans, land surface and ice. Models can range from relatively simple to very complex.

Climate Modeling • Computer-based simulations of the earth's climate that uses past and present patterns to predict the future.

Conference of the Parties (COP) • The COP is the supreme body of the United Nations Convention on Climate Change. It currently meets once a year to review the convention's progress. The word "conference" is not used here in the sense of "meeting" but rather "association" of states that have agreed to support the convention.

Deforestation • The removal or degradation of forest stands by cutting and burning to provide building materials or fuel, or to create land for agricultural purposes, building sites or roads.

Desertification • The progressive destruction or degradation of existing vegetative cover to form desert. This process can occur due to overgrazing, deforestation, drought and the burning of extensive areas. Once formed, deserts can only support a limited number of plants and animals. Climatic effects associated with this phenomenon include increased reflection of energy from the earth's surface, reduced atmospheric humidity, and greater atmospheric dust.

Emissions • The release of pollutants that can be transformed into greenhouse gases, and/or the direct release of greenhouse gases, into the atmosphere over a specified area and period of time.

Emissions Trading • Article 17 of the Kyoto Protocol establishes a mechanism whereby those countries with emissions commitments (industrialized countries) may trade their emission allowances with other industrialized countries that are parties to the protocol. For example, if a company in Canada reduces its greenhouse gas emissions to less than what it was emitting in 1990, it will have an emissions credit. The company could then sell its emission credit to an Australian firm that has not been able to reduce its emissions to 1990 levels in the necessary timeframe. The aim of emissions trading is to improve the overall flexibility and economic efficiency of making emissions reductions.

Fossil Fuel • A general term for combustible carbon deposits of biological origin, including coal, oil, natural gas, oil shales and tar sands. These fuels emit carbon dioxide into the atmosphere when burned, thus significantly contributing to the greenhouse effect and climate change.

Fossil Fuel Combustion • Burning of coal, oil (including gasoline) or natural gas, usually to generate energy. This burning releases carbon dioxide as well as by-products that can include methane and carbon monoxide. Carbon monoxide, methane, and many other unburned hydrocarbons slowly oxidize into carbon dioxide in the atmosphere. Common sources of fossil fuel combustion include cars and electric utilities.

Fossil Fuel Reserves • The quantity of a fossil fuel such as oil and coal that is known to exist, based on geological and engineering evidence, and that can be recovered under current economic conditions and operating capabilities.

Fossil Fuel Resources • The quantity of fossil fuel that is thought to exist and that may be recoverable based on an explicit scenario for future economic conditions and operating capabilities.

Global Warming • An increase in the near surface temperature of the earth. Global warming has occurred in the distant past as the result of natural influences, but the term is most often used to refer to the warming occurring as a result of increased emissions of greenhouse gases. Scientists generally agree that the earth's surface has warmed by about 0.6 degrees Celsius in the past 140 years. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that increased concentrations of greenhouse gases are causing a rise in the earth's surface temperature.

Green Corridors Initiative • Addresses the complex interrelationships among trade, transportation, environment and sustainable development spanning the Central Plains region of North America. Includes identifying and implementing bi-national and tri-national initiatives and partnerships for Canada, Manitoba and Winnipeg.

Greenhouse Effect • The effect produced as greenhouse gases allow incoming solar radiation to pass through the earth's atmosphere, but prevent most of the outgoing infrared radiation from the surface and lower atmosphere from escaping into outer space. The comparison is to a glass greenhouse capturing the sun's warmth and heating the interior space. This process occurs naturally and historically has kept the earth's temperature about 33 degrees Celsius warmer than it would otherwise be. Current life on earth could not be sustained without the natural greenhouse effect. See also Global Warming.

Greenhouse Gas • Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), halogenated fluorocarbons (HCFCs), ozone (O_3), perfluorocarbons carbons (PFCs), sulphur hexafluoride (SF_6) and hydrofluorocarbons (HFCs).

Intergovernmental Panel on Climate Change (IPCC) • Composed of the world's leading climate scientists, the IPCC was established in 1988 by the World Meteorological Organization and the United Nations Environment Programme. Its role is to assess scientific, technical and socio-economic information relevant for the understanding of the risks associated with human-induced climate change.

Joint Implementation • Article 6 of the Kyoto Protocol permits Joint Implementation whereby developed countries are able to invest in projects in other developed countries to acquire credits to assist in meeting their emissions targets. Countries are only able to use credits generated in the commitment period of 2008 to 2012. Participation is voluntary, and open to private and public entities.

Kyoto Mechanisms • Mechanisms established under the Kyoto Protocol including International Emissions Trading, Clean Development Mechanism and Joint Implementation.

Kyoto Protocol • An international agreement reached in 1997 in Kyoto, Japan, which extends the commitments of countries that supported the UN Framework Convention on Climate Change. In particular, it sets targets for future emissions in developed countries.

Methane (CH_4) • A hydrocarbon that is one of the six greenhouse gases to be controlled under the Kyoto Protocol. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and oil, coal production, and incomplete fossil fuel combustion. The atmospheric concentration of methane has been shown to be increasing at a rate of about 0.6 per cent per year. Its current concentration of about 1.7 parts per million by volume (ppmv) is more than twice its pre-industrial value. However, the rate of increase of methane in the atmosphere may be stabilizing.

No Regrets • Measures whose benefits equal or exceed their costs. These benefits include improved performance or reduced emissions of local/regional pollutants, but excluding the benefits of climate change mitigation. They are sometimes known as "measures worth doing anyway."

North America's Superhighway Coalition • A multi-state, international, non-profit corporation governed by a Board of Directors whose membership includes Minnesota and the Province of Manitoba. The goal of the Coalition is to facilitate the movement of people and goods by promoting infrastructure development, facilitating regulatory and statutory harmonization procedures, enabling intermodalism and encouraging the application of leading edge technology. It promotes economic development, trade and tourism between the three NAFTA nations along corridors in the mid-continent region of North America.

Party • A state (or regional economic integration organization such as the European Union) that agrees to be bound by a treaty and for which the treaty has entered into force.

Ratification • The confirmation or acceptance of an agreement. For instance, after initially signing the UN Framework Convention on Climate Change or the Kyoto Protocol, each country must confirm acceptance of the agreement with its own people, usually through its parliament or legislature. The accepted, or ratified, agreement is then presented to the UN Secretary General. A country becomes a Party to the Convention or Protocol 90 days after presenting its ratified agreement to the UN.

Red River Valley Clean Cities Coalition • (RRVCC) A locally based government-industry partnership coordinated by the U.S. Department of Energy. The goal of the program is to expand the use of alternative transportation fuels, such as electricity, high-blend ethanol (E85), propane and natural gas. Currently 55 designated Clean Cities from across the United States comprise a network of nearly 2,000 stakeholder businesses and agencies. The RRVCC Coalition has now joined this effort. The RRVCC Coalition covers the northern 250 miles of the mid-continent trade corridor, stretching from Winnipeg southward along Highway 75-Interstate 29 through the eastern Dakotas and western Minnesota, encompassing a population of 1.6 million.

Sequestration • The process of absorbing carbon dioxide out of the air through the process of photosynthesis, which converts carbon dioxide into plant sugars containing carbon.

Sink • An ecosystem, such as the oceans, forests or soils, that removes and stores carbon from the air. The sink serves as a means of removing a chemical or gas, such as carbon dioxide or methane, from the atmosphere and placing it in a permanent or semi-permanent repository by transforming it into another substance. Trees, for example, can serve as carbon sinks because they are able to convert carbon dioxide from the air into plant sugars through the process of photosynthesis.

Sustainable Development • A broad concept referring to the need to integrate the satisfaction of near-term economic, social and environmental interests with the protection of the interests of future generations, including their need for a safe and healthy environment. The 1987 UN World Commission on Environment and Development defined sustainable development as meeting "the needs of the present generation without compromising the ability of future generations to meet their needs."

Weather • Weather is the specific condition of the atmosphere at a particular place and time. It is measured in terms such as wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather can change from hour-to-hour, day-to-day, and season-to-season. Climate is the average of weather over time and space. A simple way of remembering the difference is that 'climate' is what you expect (e.g., cold winters) and 'weather' is what you get (e.g., a blizzard).

Zero Till • Zero till or no-till farming is an economically viable, erosion proof production system in which this year's crop is planted directly into the stubble from the previous year's crop with minimum soil disturbance.

*http://www.climatenetwork.org/canglossary.html

Appendix 2 – Terms of Reference

The Manitoba Climate Change Task Force has been created to assist in the development of Manitoba's strategy on climate change. It has been asked to produce a report to the government of Manitoba that will address and advise on the environmental challenges and economic opportunities associated with climate change.

Its purpose is to:

- Raise public awareness and develop consensus about what Manitoba actions can be taken on climate change;
- Examine options in dealing with its consequences for our future environment, natural resources and economic development;
- Consider the province's prospects for developing technology to mitigate and adapt to climate change;
- Define a made-in-Manitoba approach; and,
- Produce recommendations for government action.

The task force will consider how Manitoba might more effectively lever funding from federal government and other sources for activities related to climate change, particularly supporting research, planning and projects. It will assess the economic development and employment opportunities associated with climate change, particularly in hydro, alternative fuels and transportation.

The work of the task force is intended to build on the issues raised in the January 2001 forum sponsored by the Clean Environment Commission and the International Institute for Sustainable Development.

The report's findings and recommendations will be considered by the government of Manitoba during the development of the climate change action plan later in the year.

The task force will invite public participation to obtain Manitobans' ideas on climate change and appropriate strategies. It will hold at least three consultation meetings, including Winnipeg, rural Manitoba and northern Manitoba. It will seek written and e-mail submissions from the public and it will make special efforts to reach out to youth.

Task force members will be supported by the resources of the Clean Environment Commission and by the involvement of provincial staff from several departments, agencies and crown corporations.

The report will be completed and submitted to the government of Manitoba in September.

Appendix 3 – Submissions and Presentations

Winnipeg (May 10 and 11, 2001):

David Barber, Centre for Earth Observation Science, Department of Geography, University of Manitoba
Ken Edie, Private Representation
Mike Balshaw, MWB Consulting
Harvey Stevens, Resource Conservation Manitoba
Weldon Newton, Keystone Agricultural Producers
Carl Ridd, Committee for Justice, Ecology and the Integrity of the Earth
Ed Huebert, Mining Association of Manitoba
C.F. Shaykewich and **Guy Ash**, Private Representation
Corey Lindgren, Manitoba Chapter Wildlife Society
Oliver Monkman, Interlake Métis Association
David Burton, Department of Soil Science, University of Manitoba
Bob Turnock, Prairie Farm Rehabilitation Association – Saskatchewan
Ed Tyrchniewicz, Private Representation
Marsha Sheppard, Manitoba Chamber of Commerce
Leanne Shewchuk, Winnipeg Airports Authority
Karin Wittenberg and **Dinah Boadi**, Department of Animal Science, University of Manitoba
Cec Muldrew, Rural Municipality of Victoria Beach
Jim Kohut, Kraus Group
Mike Moore, Nature Conservancy of Canada
Mike Waldram, Manitoba Model Forest
Merrell-Ann Phare, Centre for Indigenous Environmental Resources
Malcolm Wilson, Prairie Research Adaptation Centre
Danny Blair, Private Representation
Ed Cloutis, Institute of Urban Studies, University of Manitoba
Andrew Cowan, City of Winnipeg
Bill Menzies, Winnipeg Transit
Dennis Heinrichs, Gerdau MRM Steel Inc.
Dave Angus, Winnipeg Chamber of Commerce
Lyle Lockhart, New Manitoba Environmental Council
Don Sullivan, Boreal Forest Network
Barry Prentice, Transport Institute, University of Manitoba
Peter Miller, Private Representation

Brandon (May 17, 2001):

John Whitaker, Riding Mountain Biosphere Reserve Association
Ryan Dalgleish, National Energy Conservation Association
Hans Borst, Manitoba Milk Producers
Don Sexton, Ducks Unlimited Canada
A. Moulin and **M. Monreal**, Agriculture and Food Canada – Brandon Research Centre
Percy Phillips, Motor Coach Industries
Erik Nielsen, Industry Trade and Mines – Geological Survey Branch
Scott St. George, Geological Survey of Canada
Kendall Heise, Manitoba – North Dakota Zero Tillage Farmers Association
Don Alexander, Manitoba Conservation Districts Association
Bruce Bunting, Nexen Chemicals
David Knock and **George Fraser**, Manitoba Home Builders Association
Chris Hayhurst, Simplot AgriBusiness

Thompson (June 13, 2001):

Dave Neufeld, Tolko Industries Ltd.
Sherry Hedman, Thompson Recycle Centre
Gord Wakeling, The Development Fund
Jed Drew, OmniTRAX Canada
Ken Adams, Manitoba Hydro
Darren Ottaway, Town of Churchill
Mike Goodyear, Churchill Northern Study Centre
Sonny Klyne, Northern Association of Community Councils Inc.
David Shefford, NorMan Regional Development Corporation
Victor Spence, Tataskweyak Cree Nation
Warren Martin, Private Representation
Brian Wilson, Private Representation

Expert Presentations:

David Burton, Department of Soil Science, University of Manitoba
Paul J. Miller, North American Commission for Environmental Cooperation
Jim Leslie, International Institute for Sustainable Development
Don O'Connor, (S&T) 2 Consultants Inc.
Don Kuryk, Manitoba Transportation and Government Services
Ray Hesslein, Freshwater Institute

Written Submissions:

Chief Duke Beardy, Tataskweyak Cree Nation
Allan Ciekiewicz, Private Representation
Bob Dolyniuk, Manitoba Trucking Association
Jim Feeny, Canadian National Railway
Bill Freedman, Dalhousie University
Marcel Hacault, Manitoba Pork Council
Judy Kolada, City of Thompson
Robin Macdonald, Clean Air Environment
Diane F. Malley, PDK Projects, Inc
Toby Maloney, Private Representation
Marnie McCracken, Manitoba Agriculture and Food
Les McEwan, Deerwood Soil and Water Management Association
Gordon McPhee, Private Representation
D. Garry Schaefer, Private Representation
William Sproul, Private Representation
Dawn Turner, Private Representation
Gaile Whelan-Enns, Manitoba Wildlands Campaign, Canadian Nature Federation
Edward Wolowich, Manitoba Environmental Industries Association
Deb Odegaard, Flin Flon & District Environment Council, Inc.

Appendix 4 – Summary of Procedure

The Manitoba Climate Change Task Force was established on March 20th, 2001, in an announcement by Premier Gary Doer.

The Clean Environment Commission was selected to provide office facilities and secretariat services. It was supplemented by staff provided from government departments. Officials from provincial departments, agencies and crown corporations involved in climate change formed an interdepartmental working group. This group was chaired by Bryan Gray of Manitoba Conservation and asked to provide information on current programs, as well as offer suggestions on possible new policies, programs and projects.

Task force members recognized the short time frame for the public hearings and for the production of a report. They proposed that the full range of interested parties be encouraged to participate through official submissions at the public meetings and through the task force's Web site. Advertisements and direct mail were used to invite comment and participation by everyone with an interest in the subject. The meetings were open to the public and media, and many attended as observers.

The first meeting of the task force took place on April 9. Members reviewed the terms of reference and were given extensive overview presentations on climate change from the international, regional and Manitoba perspectives. Earlier in the day, the Chair had been briefed by officials from the government of Manitoba about some of the climate change programs already in place.

The second meeting, held in Winnipeg on May 10 & 11, involved a wide range of presentations and discussions with individuals and representatives of several organizations.

The third meeting, held in Brandon on May 17, followed a similar procedure as Winnipeg, with several presentations and exchanges of views throughout the afternoon and evening. A technical presentation on carbon sinks and related issues was also made in Brandon at the request of the task force members. Members were also provided at that time with the package of information on current federal and provincial government programs prepared by members of the interdepartmental working group.

The fourth meeting was in Thompson on June 13. The presentations included an explanation by Manitoba Hydro about its climate change perspectives.

Two youth events were held on May 26 and on June 14 to bring together high school students from urban and rural areas to discuss the impact of climate change and ask for their ideas. Young people were also invited to provide their views through the Premier's youth Web site.

Overall, the task force had 65 presentations involving the explanation of information and advice, as well as subsequent questioning and discussion by task force members. Nineteen additional submissions were received via the task force Web site.

Appendix 5 – Members, Staff and Advisors

Task force Members:

Hon. Lloyd Axworthy (Chair), Director and CEO, Liu Centre for the Study of Global Issues, University of British Columbia
Jim Carr, President, Business Council of Manitoba
Maureen Hancharyk, President, Manitoba Nurses Union
Michael Spence, Mayor, Town of Churchill
Elaine Cowan, President, The Anokiiwin Group
David Runnalls, President, International Institute for Sustainable Development
Jack Dubois, Chairman, Manitoba Habitat Heritage Corporation
Christine Hamblin, Keystone Agricultural Producers, farmer

Staff:

Terry Duguid, Executive Director and Ex-Officio task force Member (Chair, Manitoba Clean Environment Commission)
John Spacek, Project Director (Senior Director, Manitoba Transportation and Government Services)
Juliane Schaible, Senior Advisor (Industry Consultant, Manitoba Industry, Trade and Mines)
Rory Grewar, Jim Potten and Joyce Mueller (seconded by the Manitoba Clean Environment Commission)
John Drexhage, Shawna Curtis, Jo-Ellen Parry, Victoria Kellett (assigned by the International Institute for Sustainable Development)

The Manitoba Climate Change Task Force gratefully acknowledges the Departments of Transportation and Government Services as well as Industry, Trade and Mines for the assignment of staff to the Manitoba Climate Change Task Force Secretariat.

Contributors:

The task force members wish to acknowledge the extensive contributions of people and resources by the provincial government departments, agencies and crown corporations that participated through the Interdepartmental Working Group. The Interdepartmental Working Group, chaired by Bryan Gray of Manitoba Conservation, provided critical information and ideas throughout the process. The Group included: Christine Burton, Community & Economic Development Committee; David Chadwick, Aboriginal & Northern Affairs; John Drexhage, IISD; Jane Gray, Executive Council; Bill Hamlin, Manitoba Hydro; Glen Holmes, Manitoba Conservation; Shaun Loney, Finance; Grant McVicar, Manitoba Conservation; Juliane Schaible, Industry, Trade and Mines; John Spacek, Transportation and Government Services; Bryan Yusishen, Agriculture and Food; and Terry Zdan, Transportation and Government Services. Contributions were also received with great appreciation from: Wilf Falk, Manitoba Bureau of Statistics; Dr. Christine Kaszycki, Industry, Trade and Mines; Michael Rennie, Finance; Alf Warkentin, Manitoba Conservation; and Deirdre Zebrowski, Manitoba Conservation.

Also instrumental in the task force's work were staff members of the International Institute for Sustainable Development, namely Heather Creech, Stuart Slayen, Jason Manaigre, Graham Ashford, Jennifer Castleden, Dennis Cunningham, Chantal Guertin, and Allen Tyrchniewicz. This Winnipeg-based organization has an outstanding reputation around the world for its work in climate change, and is an exceptionally valuable asset for Manitoba and Canada.

Other notable contributors of constructive ideas, information and assistance were Don Shields, former Dean of Engineering at the University of Manitoba; Ken Beeson, Managing Director of Public Policy Management in Vancouver; and Bill Freedman, Dalhousie University.

Financial support for the task force was provided by the government of Manitoba through its Climate Change Action Fund. The task force is also grateful for financial and technical assistance from The Hon. Ron Duhamel and his officials at Western Economic Diversification in the Manitoba region.

Appendix 6 – Task Force Letter to Premier Doer

Manitoba Climate Change Task Force

305-155 Carlton Street
Winnipeg, Manitoba
R3C 3H8

25 July 2001

Honourable Gary Doer
Premier of Manitoba
Room 204 – 405 Broadway Avenue
Winnipeg, MB R3C 0V8

Dear Premier Doer:

On behalf of members of the Manitoba Climate Change Task Force, I wish to address the need to respond quickly to the recent decision at Bonn to proceed with the implementation of the Kyoto Protocol.

Now the focus will shift in Canada to issues of ratification and implementation. Thus, the findings of this task force will provide you with a timely assessment of the issue and prescriptions for action prior to the Joint Ministerial Meeting on September 24, 2001 in Winnipeg.

However, before then, there is the opportunity for Manitoba to take a leadership role vis-à-vis the other provinces that will require a response from your government to the recent developments in Bonn. In this respect, I am conscious of the forthcoming Premier's Meeting in Victoria. So we would like to offer the following interim recommendations:

First, strongly endorse the need for quick ratification with an effective but short consultation process. No repeat of the Charlottetown process.

Second, assert a more definitive role for the provinces, as the key jurisdictions for ensuring implementation of the Action Plan. The process of the Social Contract Agreement could be a model.

Third, promote a co-operative regional approach for the Prairie region since we share an environmental footprint.

Fourth, look at ways to work with the United States to develop continental plans for a greenhouse gases emissions trading regime to parallel the energy program.

Fifth, examine how the flexibility offered by the Bonn agreement in the matter of sinks and emissions trading can be quickly developed on a federal-provincial co-operative basis.

In addition to these recommendations, I want to draw your attention to the need for quick action on the window of opportunity for the Urban Showcase Proposal that requires immediate attention by your government.

We, through our Secretariat, can provide you with details as to what needs to be done to take advantage of these opportunities.

If you have any questions, please give me a call.

Regards,

Lloyd Axworthy

Lloyd Axworthy, Chair

Climate change internet resources

www.unfccc.int
United Nations Framework Convention on Climate Change
This site includes the complete text of the Kyoto Protocol plus statistics and background on climate change.

www.nccp.ca
The National Climate Change Process
This site includes information about Canada's actions on climate change with links to a variety of other Web sites.

www.ipcc.ch
Intergovernmental Panel on Climate Change
This site includes the publications of the IPCC as well as links to other climate Web sites.

www.climatechange.gc.ca
Government of Canada Climate Change
This site has links to federal departments' material on climate change, describing adaptations and impacts.

www.ec.gov.ca/climate/ccs/
Canada Country Study
This site highlights the impacts of climate change throughout Canada.

www.iisd.org/climatechange.htm
International Institute for Sustainable Development
IISD's Web site on climate change highlights regional, national and international material on climate change.

www.weathervane.rrf.org
Weathervane
This Web site is a digital forum on global climate policy published by Resources for the Future.

www.taiga.net/nce
The Northern Climate Exchange
This Web site features climate information on northern regions.

www.pewclimate.org
The Pew Foundation
The Pew Foundation's climate change Web site focuses on information and innovative solutions.

www.pembina.org/climate
The Pembina Institute
This climate change Web site highlights solutions.

www.vcr-mvr.ca
The Voluntary Challenge Registry
This Web site records some of the public action taken by Canadian organizations to reduce their greenhouse gas emissions.

www.davidsuzuki.org
The David Suzuki Foundation
A science based environmental organization that focuses on finding solutions.

For more information contact:

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